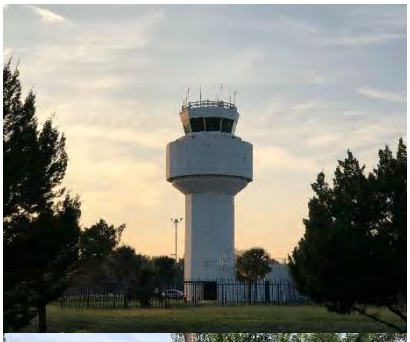

Vero Beach Regional Airport Master Plan

Final Report

Vero Beach, Florida

August 2024

VERO BEACH REGIONAL AIRPORT | HANSON

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Executive Summary

Introduction

The city of Vero Beach initiated an airport master plan update in July 2022 for the Vero Beach Regional Airport (VRB) to ensure the airport continues to safely and efficiently meet the needs of residents, users and businesses in the region. The airport master plan evaluates airport conditions and forecasts aviation activity, which is the basis for improvements to recommended facilities. The plan also analyzes development alternatives to determine the most cost-effective and environmentally sensitive way to advance recommended improvements. Short-, mid- and long-term development goals over the 20-year planning horizon are included in the update, along with an implementation plan with associated cost estimates and financial pro forma.

The city and airport management are using the master plan update to focus on key airport service areas, including commercial airline flights and corporate and general aviation. It also provides opportunities to identify potential sources of nonaeronautical revenues to aid in financially supporting airport operations.

A planning advisory committee (PAC) was established to inform and guide the master planning process. The PAC represents a diverse group of stakeholders, including local government representatives, airport tenants and users and business and local community organizations. Several of the PAC meetings were conducted as joint meetings with the airport commission.

The airport master plan update is a collaborative effort involving a wide range of other stakeholders and public involvement activities, ensuring a comprehensive, inclusive and informed approach to the master planning process.

The Federal Aviation Administration (FAA) and the Florida Department of Transportation (FDOT) require updated airport master plans to maintain eligibility for federal and state airport funding programs. This update satisfies these requirements and will supersede the update conducted in 2016.

Constructed in 1929 and commissioned as Naval Air Station Vero Beach in 1942 to support the training of naval aviators for World War II, today, the airport serves as a vibrant transportation hub connecting the region to other areas of the state, the nation and the global economy. Encompassing more than 1,700 acres, the airport is home to 14 aviation-related businesses and more than 50 nonaeronautical tenants.

The airport serves as a vital economic stimulus for the region, with nearly $1 billion in annual impact, as detailed in FDOT's *2022 Florida Statewide Aviation Economic Impact Study.* The study also recognizes the airport supports more than 5,500 jobs, with a payroll exceeding $388 million.

This master plan update provides a solid foundation and blueprint for development, guiding the continued success of VRB. The 20-year plan projects a modest 2.5% rate of growth in based aircraft and a 4% average annual growth rate in airport operations. It identifies more than $147 million in additional infrastructure and facilities to safely and efficiently meet the forecasted demand in 2043.

Master Plan Elements

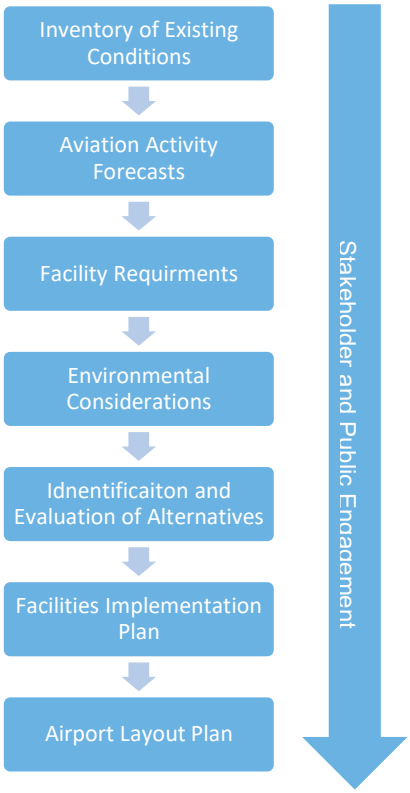
FAA Advisory Circular 150/5070-6B, Change 2: Airport Master Plans and FDOT's 2021–22 *Guidebook for Airport Master Planning* provides guidance and outlines requirements airport sponsors must follow in developing an

airport master plan. The city has followed these requirements and guidance in preparing the master planning documents.

This executive summary provides an overview of the results of the primary requirements of the airport's master plan update and project scope of work. These items include:

- Conducting meaningful stakeholder and public engagement throughout the planning process to gather feedback to inform the master planning efforts.
- Conducting an inventory of airport conditions and analyzing aviation industry trends that have or could impact the airport's operation since the last planning effort.
- Developing 20-year aviation activity forecasts for based aircraft, airport operations and commercial service enplanements.
- Projecting airport facility requirements to meet forecasted aviation activity and conformance with FAA design guidelines to ensure the continued safe operation of the airport.
- Analyzing alternatives to implement facility requirements in the most financially feasible and environmentally sensitive manner deemed practical.
- Using preferred alternatives for future projects, developing an implementation program and a five-year capital improvement plan.
- Developing an airport layout plan (ALP) drawing set that depicts recommended projects for implementation during the planning period to 2043.
- Preparing a recycling, reuse and waste reduction plan to identify ways to minimize municipal solid waste generation.
- Assessing local land use goals and ensuring compatibility with proposed airport development.

FIGURE 1: MASTER PLAN ELEMENTS



Stakeholder and Public Engagement

The stakeholder and public involvement program for the master plan included establishing a PAC composed of local agencies, community business leaders and airport tenants. The PAC convened at four milestone intervals to offer input and review project documentation. A project website was established to publicly post project deliverables and presentations from the PAC meetings and public workshops during the study process. It also featured a portal for soliciting comments and questions from interested parties and responses to those inquiries. Additionally, one in-person public information meeting was held. In-person interviews were conducted with key stakeholders and airport tenants, and a survey of current tenants was facilitated. Feedback from the stakeholders and the public was used to inform the master planning process and incorporated into the development of facility requirements and alternatives, where appropriate.

Airport Inventory

The airport inventory was conducted using field observations, interviews and a review of the drawings and documents on file with the FAA and airport management. The information collected during this phase of the project provides a baseline on which to build the facility requirements and preferred alternatives for development.

Significant inventory items include:

- **Runway 12R/30L:** 7,314'x100' – asphalt surface in excellent condition with medium-intensity lighting
- **Runway 4/22:** 4,974'x100' – asphalt surface in good condition with medium-intensity lighting
- **Runway 12L/30L:** 3,504'x75' – asphalt surface in fair condition with medium-intensity lighting
- **Taxiways and connectors:** Taxiway A – full-length parallel east of Runway 4/22; Taxiway B – partial parallel taxiway west of Runway 4; Taxiway C – full-length parallel taxiway south of Runway 12R/30L; Taxiway D – crossfield access to runways 12L, 30R and 22; Taxiway E – partial parallel taxiway north of Runway 12R/30L; and Taxiway F – full-length parallel taxiway to Runway 12L/30R
- **Visual navigational aids:** precision approach path indicators on all runways
- **Instrument approaches:** GPS with vertical guidance on runways 12R, 30L, 4 and 22 with descent minimums of 256, 200, 273 and 317 feet above ground level, respectively
- **Weather reporting station:** automated surface observing system (ASOS)
- **Air traffic control tower:** FAA-staffed, operating 7 a.m. to 9 p.m. daily
- **Aircraft rescue and firefighting (ARFF) station:** 12,000 sq. ft.
- **Fuel:** Three Jet-A and four 100LL fueling areas, one Autogas and one diesel fueling area for ground vehicles
- **Aeronautical businesses:** 15, including two fixed-base operators – Corporate Air and Sun Aviation; Piper Aircraft; and flight training schools – Paris Air and Skyborne Airline Academy Vero Beach
- **Aircraft storage facilities:** 22 corporate hangars, 19 corporate/box hangars and 55 T-hangars
- **Terminal building:** 24,000 sq. ft., accommodating commercial service flights and a restaurant
- **Terminal area parking:** 111 short-term and 133 long-term spaces
- **Nonaeronautical businesses:** 50+, including restaurants, retail and services
- **Utilities:** electric, water, sewer, natural gas and fiber

Environmental Considerations

An environmental overview was conducted to identify potential environmental impacts of the airport development alternatives studied in the master plan. The environmental overview is a screening tool to aid in bringing forward environmentally sensitive preferred alternatives for future airport development. As projects are justified for implementation, the information identified will help expedite future environmental assessment studies required under the National Environmental Policy Act and other state and local regulations.

Impact categories for air quality; biological resources including wildlife, federal- and state-listed species and essential fish habitat; U.S. Department of Transportation Act Section 4(f) lands, including public parks, recreation areas and wildlife and waterfowl refuges; hazardous materials and waste management; historical, archaeological and cultural resources; wetlands, other surface waters and floodplains; and noise and construction impacts were reviewed and included in the environmental overview.

The master plan report includes a detailed review of the impact categories. The environmental overview did not identify any impacts that could not reasonably be mitigated through construction best management practices, permitting or avoidance.

Aviation Activity Forecasts

Forecasts, which form the basis for future development needs at VRB, were prepared for the three primary airport activity indicators: based aircraft, annual aircraft operation and passenger enplanements. In developing the forecasts, previous activity forecasts, industry trends, local socioeconomic conditions and historical data were analyzed and applied to FAA- and FDOT-accepted forecasting methodologies.

Aviation activity forecasts for the 20-year planning horizon are presented below. The average annual growth rates for based aircraft, operations and air carrier operations are 2.3%, 4% and 2.5%, respectively.

TABLE 1: AVIATION ACTIVITY FORECASTS

Aviation Activity Forecast	Base Year 2022	2028	2033	2043
Based Aircraft	207	237	266	334
Local Operations	52,340	98,200	120,600	153,950
Itinerant Operations	81,462	120,100	147,300	153,950
Total Annual Operations	133,802	218,300	267,900	307,900
Air Carrier Operations	56	786	889	1,138
Passenger Enplanements	1,948	38,400	43,400	55,500

The aviation activity forecast was prepared before the start of commercial service operations by Breeze Airways. Based on data provided by VRB, from the start of commercial service operations in February 2023 to March 2024, the actual passenger enplanements are 74,848. This airport master plan took into consideration the actual growth activity during the facility requirement analysis and alternatives development.

Air carrier operations and passenger enplanements are based on Breeze Airways' current service at VRB. This service offers six weekly flights to Connecticut's Bradley International Airport in Windsor Locks and New York's Westchester County Airport in West Harrison. These flights are operated on the 118-seat Embraer ERJ-195 and 126-seat Airbus 220-300.

It is important to note that these forecasts are realistic projections of demand that is anticipated to occur. justification for future construction of facilities will be based on actual documented demand.

Critical Aircraft Determinations

Airport planning criteria and design standards for various airfield elements are based on the critical design aircraft that makes regular use of the airport. Regular use is defined as at least 500 annual operations. The critical aircraft is the most demanding aircraft type or grouping of aircraft with similar physical and operational characteristics. The dimensional design standards for facilities on the airport, including runway length, runway/taxiway separation, safety areas, etc., allow the airport to meet the safety and operational requirements of the designated critical aircraft. The analysis determined that the Airbus 220-300, which is defined as a C-III aircraft by its runway design code (RDC), is the current critical aircraft. The future critical aircraft was determined to be a Gulfstream 650, which requires RDC D-III standards.

Facility Requirements

Facility requirements were prepared to meet FAA airport design standards and Title 14 Code of Federal Regulations Part 139 certification requirements using the FAA-approved aviation forecast, designated critical aircraft and information gathered from interviews conducted during the inventory phase. The significant facility requirements that were identified include:

Airfield Infrastructure

- Eliminate declared distances on runways 12R/30L and 4/22
- Eliminate overlapping runway safety areas on runway 4/22 and 12L/30R
- Extend Runway 22
- Mitigate direct apron-to-runway connectors
- Extend Taxiway B
- Realign Taxiway C
- Extend and widen Taxiway E
- Potentially relocate southern portion Taxiway A
- Add bypass taxiway at Runway 12R
- Redesignate taxiway end connectors
- Relocate ASOS, wind rose, segmented circle, and compass calibration pad
- Designate areas for future hangar construction
- Upgrade perimeter fence and security equipment

Terminal Building and Commercial Service Facilities

- Preserve space for terminal building expansion
- Add auto parking
- Improve pedestrian access

Roadways

- Improve Airport Boulevard
- Extend and improve airport service road

Support Facilities and Other

- Construct new ARFF station and acquire ARFF vehicle
- Construct airport operations facility
- Develop general aviation hangar facilities
- Add general aviation customer parking
- Improve airport business parks

Alternatives Analysis

An alternatives analysis was completed for the major projects identified in the facilities requirements phase. The analysis for each project included a technical feasibility review to ensure that the project would meet FAA standards. Additionally, each project was evaluated for operational performance, best planning practices and environmental and fiscal factors. A no-build alternative was also analyzed for each project. However, the no-build alternative did not allow the airport to meet the previously identified forecasted demand and user requirements. The development alternatives primarily focused on the airfield, facilities requiring airfield access and areas to support nonaeronautical development.

Recommended Development and Implementation Plan

The alternatives analyses of the facilities requirements resulted in the selection of a preferred alternative for recommended development during the 20-year planning period. The recommended development plan is based on technical, operational, financial, environmental, social and political feasibility and feedback from the PAC and public workshop. Seventy-one projects were identified, including capital projects to expand the commercial terminal building, extend Runway 4 and improve the airport's taxiway system to enhance safety and provide additional capacity; construction of additional hangars to address the growing waiting list of owners seeking storage for their aircraft; surface transportation projects to improve access to the airport and circulation within the airport; additional auto parking; and the development of nonaeronautical-use areas. Projects also include the rehabilitation of aging airfield pavement infrastructure, electrical systems and support facilities. A summary of the airfield improvements contained in the implementation plan is shown below, along with a prioritized project list and cost estimates for developments recommended in the short-, intermediate- and long-term planning horizons.

FIGURE 2: RECOMMENDED IMPROVEMENTS

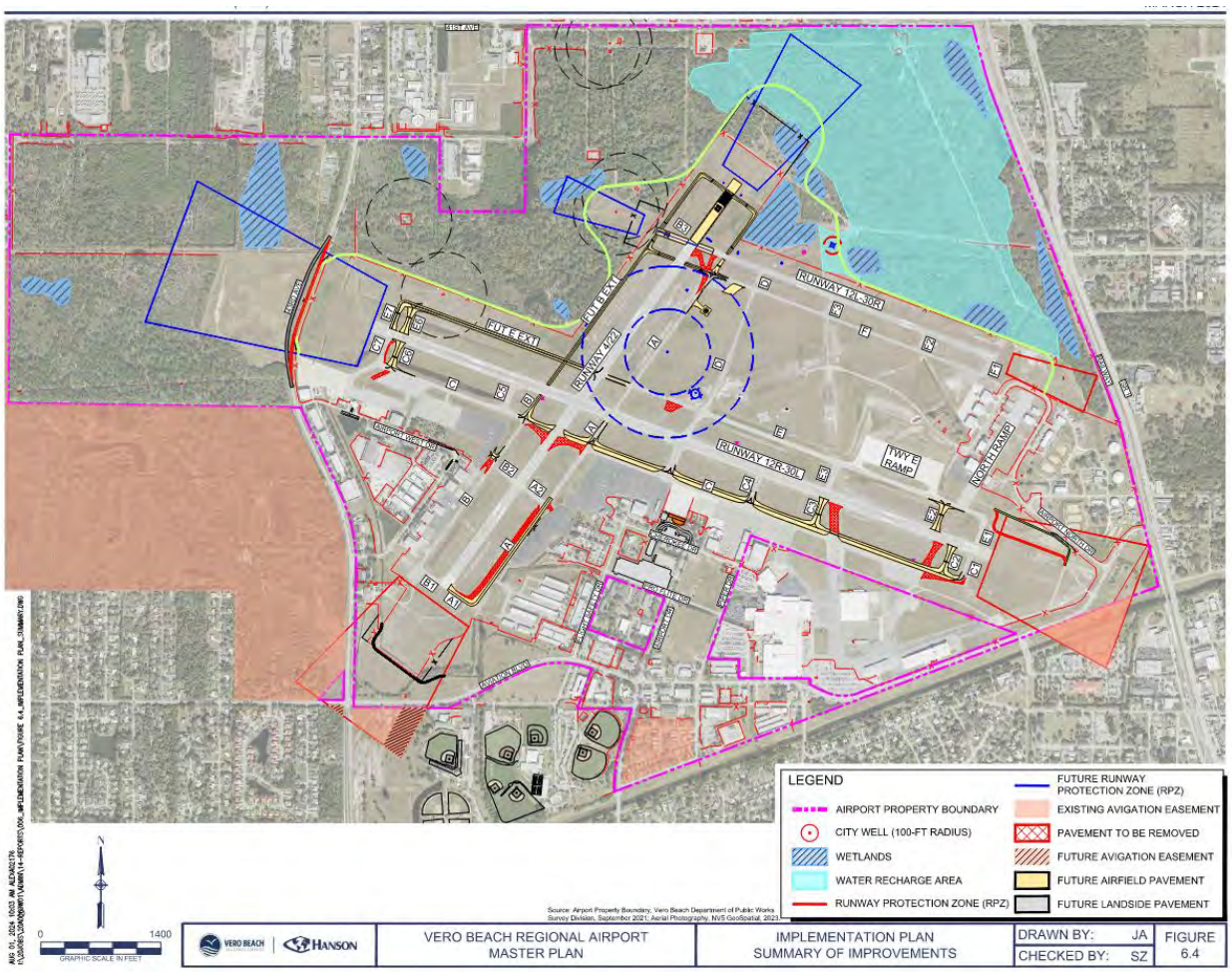


TABLE 2: SHORT-TERM CAPITAL IMPROVEMENT PROJECTS

#	Project	Year	Federal	State	Local	Total
Short-Term (1–5 Years) (2024–28)						
1	Redevelop Commercial Park (Phase 2)	2024	-	$235,000	$ 235,000	$470,000
2	Extend Taxiway B (EA & Design)	2024	-	$340,000	$80,000	$420,000
3	Complete Airport Master Plan Update	2024	$102,006	$5,667	$5,667	$113,340
4	Complete Storm Water Master Plan	2024	$65,597	$3,644	$3,644	$72,886
5	Rehabilitate Airport Terminal Construction Phase I	2024	-	$480,000	$120,000	$600,000
6	Rehabilitate Airport Terminal Construction Phase II	2024	$1,530,000	$565,000	$255,000	$2,350,000
7	Rehabilitate Taxiway B Construction	2024	$1,980,000	$110,000	$110,000	$2,200,000
8	Expand Terminal Parking Lot	2024	-	$1,000,000	$250,000	$1,250,000
		Yearly Total 2024	**$3,677,603**	**$2,739,311**	**$1,059,311**	**$7,476,226**
9	Acquire ARFF Vehicle	2025	-	$1,015,840	$253,960	$1,269,800
10	Replace Hangar Roof	2025	-	$800,000	$200,000	$1,000,000
11	Install Airport Utilities and Critical Infrastructure	2025	-	$500,000	$500,000	$1,000,000
12	Rehabilitate Taxiway A South of Runway 12R – Design	2025	$ 313,500	$8,300	$8,300	$330,000
13	Upgrade Airfield Electrical	2025	-	$1,440,000	$360,000	$1,800,000
14	Construct Connector Taxiway C6	2025	$1,125,000	$ 62,500	$62,500	$1,250,000
		Yearly Total 2025	**$1,501,000**	**$3,795,390**	**$1,353,510**	**$6,649,800**
15	Relocate Auto Parking to Expand Passenger Terminal Building	2026	$1,320,300	$34,750	$34,750	$1,389,800
16	Rehabilitate Taxiway A South of Runway 12R – Construction	2026	$1,947,500	$51,250	$ 51,250	$2,050,000
17	Extend Taxiway B (Construction)	2026	-	$2,960,000	$740,000	$3,700,000
18	Relocate ASOS, Wind Cone and Segmented Circle	2026	-	$280,000	$70,000	$350,000
		Yearly Total 2026	**$3,267,800**	**$3,326,000**	**$896,000**	**$7,489,800**
19	Improve Airport Business Park	2027	-	$800,000	$ 200,000	$1,000,000
		Yearly Total 2027	**$0**	**$800,000**	**$200,000**	**$1,000,000**
20	Extend/Mark/Light Taxiway E West of Runway 4 – Design & EA	2028	$1,260,000	$70,000	$70,000	$1,400,000
21	Extend Runway 4/22 and Runway 12L/30R, Phase 1 Environmental	2028	$360,000	$20,000	$20,000	$400,000
		Yearly Total 2028	**$1,620,000**	**$90,000**	**$90,000**	**$1,800,000**

Source: Hanson Professional Services Inc., 2024.

TABLE 3: INTERMEDIATE-TERM CAPITAL IMPROVEMENT PROJECTS

#	Project	Sponsor Year	Federal	State	Local	Total
Intermediate-Term (6–10 Years) (2029–33)						
22	Upgrade Vehicle Gates	2029	$1,020,000	$ 60,000	$60,000	$1,140,000
23	Extend Utilities to Open Northwest Development Area	2029	$1,000,000	$60,000	$60,000	$1,120,000
24	Expand Passenger Terminal Building (Design)	2029	$456,000	$10,000	$10,000	$476,000
25	Widen Taxiway E Between Taxiway D and Runway 4/22	2029	$270,000	$20,000	$20,000	$310,000
26	Relocate Compass Calibration Pad	2029	-	$480,000	$120,000	$600,000
27	Extend/Mark/Light Taxiway E West of Runway 4 – Construction	2029	$4,090,000	$230,000	$230,000	$4,550,000
		Yearly Total 2029	**$6,836,000**	**$860,000**	**$500,000**	**$8,196,000**
28	Extend Runway 4/22, Phase 2	2030	$4,220,000	$230,000	$230,000	$4,680,000
29	Extend Taxiway A to New Runway 22 End	2030	$1,860,000	$100,000	$100,000	$2,060,000
30	Extend Runway 12L	2030	$1,640,000	$ 90,000	$90,000	$1,820,000
31	Relocate Taxiway C3	2030	$1,125,000	$ 62,500	$62,500	$1,250,000
32	Construct ARFF Station	2030	$3,600,000	$200,000	$200,000	$4,00,000
33	Acquire Avigation Easements Off Runway 4 End	2030	$530,000	$30,000	$30,000	$590,000
Yearly Total 2030			**$12,975,000**	**$712,500**	**$712,500**	**$14,400,000**
34	Rehabilitate T-Hangar Taxilanes	2031	$2,570,000	$140,000	$140,000	$2,850,000
35	Rehabilitate Airport Drainage System	2031	$1,900,000	$50,000	$50,000	$2,000,000
36	Upgrade Perimeter Fence on South Side of Airfield and Add Cameras	2031	$880,000	$50,000	$50,000	$980,000
37	Extend Taxiway F to New Runway 12L End	2031	$890,000	$50,000	$50,000	$990,000
38	Extend Taxiway B to New Runway 22 End	2031	$1,930,000	$ 110,000	$110,000	$2,150,000
39	Construct Parking Along Airport West Drive	2031	-	$255,000	$255,000	$510,000
		Yearly Total 2031	**$8,170,000**	**$6550,000**	**$655,000**	**$9,480,000**
40	Rehabilitate Runway 12L/30R	2032	$5,400,000	$300,000	$300,000	$6,000,000
41	Rehabilitate Taxiway F	2032	$3,990,000	$230,000	$230,000	$4,450,000
42	Rehabilitate Existing Terminal Parking Lot	2032	-	$690,000	$170,000	$860,000
		Yearly Total 2032	**$9,390,000**	**$1,220,000**	**$700,000**	**$11,310,000**
43	Expand passenger Terminal Building (Construction)	2033	$2,732,400	$150,000	$150,000	$3,032,400
44	Extend Perimeter Airport Service Road – West Wide	2033	-	$1,570,000	$390,000	$1,960,000
45	Relocate Taxiway C2	2033	$1,020,000	$60,000	$60,000	$1,140,000
46	Upgrade Electrical – Convert High-Mast Lighting to LED	2033	$410,000	$20,000	$20,000	$450,000
47	Improve Airport Boulevard – 43rd Avenue to Airport Drive	2033	-	$ 2,580,000	$640,000	$3,220,000
48	Improve Airport Business Park	2033	-	$250,000	$250,000	$500,000

Source: Hanson Professional Services Inc., 2024.

TABLE 4: LONG-TERM CAPITAL IMPROVEMENT PROJECTS

#	Project	Federal	State	Local	Total
Long-Term (10-Plus Years) (2034–43)					
49	Construct Additional Airport Operations Facility	-	$1,510,000	$1,510,000	$3,020,000
50	Acquire ARFF Vehicle	-	$850,000	$850,000	$1,700,000
51	Improve Airport Boulevard – 27th Avenue to 27th Street	-	-	$1,430,000	$2,860,000
52	Improve Airport Boulevard – 27th Street to SR 1	-	$1,290,000	$1,290,000	$ 2,580,000
53	Rehabilitate Runway 4/22	$12,400,000	$690,000	$690,000	$13,780,000
54	Realign Taxiway C and Rehabilitate Taxiway C West of Runway 4	$13,110,000	$730,000	$730,000	$14,570,000
55	Construct Taxiway E2 Connector	$1,000,000	$60,000	$ 60,000	$1,120,000
56	Taxiway A Partial Realignment	$3,740,000	$210,000	$210,000	$4,160,000
57	Relocate 43rd Avenue	-	$1,540,000	$1,540,000	$3,080,000
58	Install MALSR on Runway 12R	$1,910,000	$110,000	$110,000	$2,130,000
59	Realign Runway 4 Swale and Perimeter Fence	$1,170,000	$70,000	$70,000	$1,310,000
60	Extend Roads and Utilities to Open West Nonaeronautical Development	-	$ 2,400,000	$ 2,400,000	$4,800,000
61	Relocate Airport Service Road Around 30L (North Side)	-	-	$280,000	$560,000
62	Extend Perimeter Airport Service Road – North Side	-	-	$2,140,000	$4,280,000
63	Upgrade Electrical Vault	-	$730,000	$730,000	$1,460,000
64	Rehabilitate Midfield Service Road	-	$1,020,000	$1,020,000	$2,040,000
65	Rehabilitate Airport West Drive	-	$710,000	$710,000	$1,420,000
66	Rehabilitate Airport North Drive	-	$740,000	$740,000	$1,480,000
67	Rehabilitate Cherokee Drive	-	$280,000	$280,000	$560,000
68	Rehabilitate Flight Safety Drive	-	$330,000	$330,000	$660,000
69	Rehabilitate Pro Flight Drive	-	$280,000	$280,000	$560,000
70	Rehabilitate Piper Drive	-	$450,000	$450,000	$900,000
71	Improve Airport Business Park	-	$ 250,000	$250,000	$900,000
	Total for 2034-2043	**$33,330,000**	**$18,100,000**	**$18,100,000**	**$69,530,000**

Source: Hanson Professional Services Inc., 2024.

The estimated development costs to implement all projects identified in the master plan, as shown below, total approximately $150 million. The airport anticipates eligibility for more than $84 million in federal Airport Improvement Program funding, along with $36 million in state funding. The remaining $25 million will be funded by the city.

TABLE 5: SUMMARY OF ESTIMATED DEVELOPMENT COSTS

Estimated Development Costs	Federal	State	Local	Total
Short-Term Development 2024–28	$10,003,903	$10,781,951	$3,630,071	$24,415,826
Intermediate-Term Development 2029–33	$41,533,400	$8,077,500	$4,077,500	$53,688,400
Long-Term Development 2034–43	$33,330,000	$18,100,000	$18,100,000	$69,530,000
Total Master Plan Development Cost	**$84,867,303**	**$36,959,451**	**$25,807,571**	**$147,634,226**

Source: Hanson Professional Services Inc., 2024.

A projected cash flow pro forma was prepared for the 20-year planning horizon for airport income and expenses. Net operating income for each year in the period yielded a positive cash flow, ranging from approximately $500,000 to $1.4 million annually. When including the local share of the capital outlay required to implement the projects identified in the master plan, the pro forma shows a negative cash flow that averages approximately $562,000 annually, primarily in the long-term years, when there are more planned projects only eligible for state-local funding. This will require the city to monitor the airport's cash flow and seek additional grant funds, develop additional revenue sources or provide supplemental funding, as necessary, to fully implement the master plan recommendations.

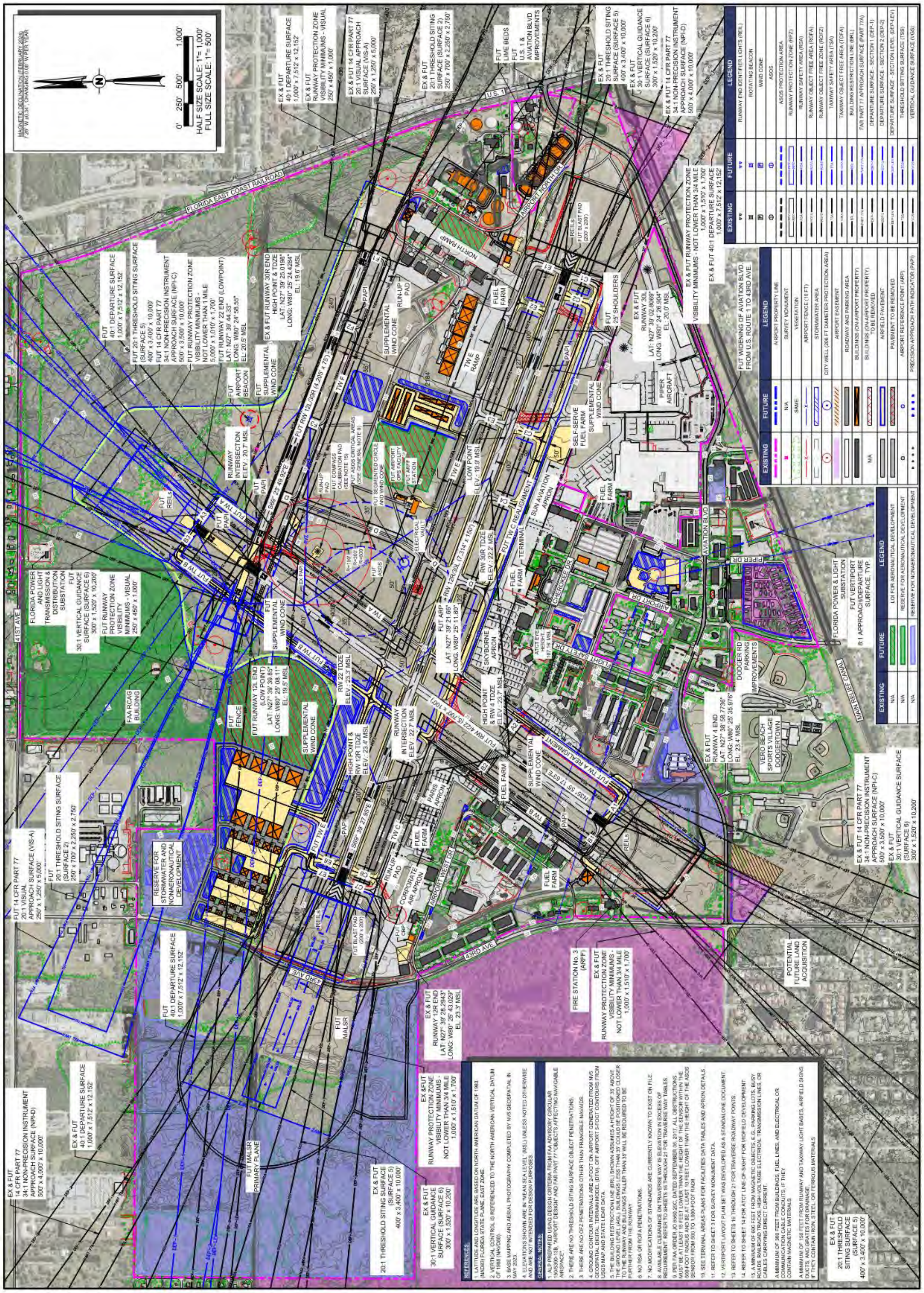
Airport Layout Plan Drawing Set

An ALP drawing set has been developed to graphically depict the existing airfield conditions, recommended projects and facility requirements for the airport’s future development, as detailed in the master plan update. It identifies the areas of the airfield and airport environment that should be preserved to accommodate short- and long-term development and clearly outlines the current FAA design standards determined by the existing and future critical aircraft.

The ALP is reviewed by various lines of business within the FAA to ensure any proposed development will not adversely impact the safety, utility or efficiency of the airport or the surrounding airspace. When reviewing proposed development around the airport, the FAA will also use the ALP to protect the airspace from potential encroachment.

The VRB ALP drawing set includes more than 34 sheets showing the existing and proposed facilities at the airport, as well as the airport within the surrounding community. The ALP also includes terminal area drawings, vertiport layout, airspace drawings and obstruction data tables for each of the six runway ends**,** airport land use drawings and an airport property map. In addition, a separate Exhibit “A” property map, containing sheets, and a vertiport layout plan with six sheets have been prepared to support the ALP.

FIGURE 3: FUTURE AIRPORT LAYOUT DRAWING



Next Steps

The completed airport master plan update provides a new baseline by which to periodically monitor actual aviation activity versus the growth in activity forecasted for the 20-year planning horizon. The city of Vero Beach will monitor aviation activity levels and new local, state and federal regulations for their impact on the development depicted in the airport master plan update. Additionally, the city will closely monitor the announcement of new federal and state aviation-related funding opportunities to supplement the financial feasibility of advancing future development projects. Monitoring technology advancements and emerging trends in the aviation industry will also be critical in gauging the prioritization and implementation of airport development during the next 20 years.

1. Background and Inventory

1.1. Need for Master Plan

Evolving from a naval air station, Vero Beach Regional Airport (VRB or KVRB) is a vibrant, busy airport. It is approximately 1,700 acres and accommodates more than 10 aeronautical tenants and more than 50 nonaeronautical tenants. The majority of the more than 130,00 annual operations in 2022 at VRB were by general aviation (GA) aircraft, including significant pilot training activity. VRB is also home to more than 200 based aircraft, including 18 business jets and 40 multiengine aircraft. As a warm weather vacation destination, VRB frequently accommodates corporate jet aircraft from the Midwest and East Coast. VRB can also accommodate commercial passenger service. In 2022, VRB was named the Florida Department of Transportation's (FDOT) general aviation airport of the year.

The mission of VRB is to provide safe and efficient aviation facilities and associated services to commercial and noncommercial users while operating in harmony with the community's quality of life goals. This planning process and the resulting airport master plan is a tool to assist VRB in meeting its mission.

The most recent planning process for VRB was an airport layout plan (ALP) update completed in 2016. That study was conducted shortly after the initiation of commercial service with jet aircraft and focused on the development of commercial service facilities. This airport master plan will provide strategic planning direction and focus for VRB, covering a range of aeronautical and nonaeronautical uses, and assist in identifying long-term facility needs over a 20-year planning period. Along with the airport master plan narrative report, an ALP drawing set will be prepared to depict the preferred development. The ALP will use new airport geographic information system (GIS) mapping prepared to Federal Aviation Administration (FAA) standards. This airport master plan will be produced simultaneously with the stormwater master plan. Although developed as separate documents, information from the two studies will be integrated to provide an overall vision for VRB.

This report contains numerous aviation terms and acronyms that, in addition to being identified in the body of the document, are summarized in **Appendix A**. This glossary includes terms and acronyms common to general aviation airport management or airport operations.

Study Goals

The goal of this planning process is to provide a foundation for development at VRB to serve the community's aviation needs that, in turn, support economic development. Managing an airport is a complex process. It includes providing a safe facility while meeting a range of regulations, including aviation and environmental; managing multiple leases; providing value to the community in alignment with community goals; supporting economic growth; and competing for limited grant funds while managing within the airport budget. The airport master plan will consider each of these goals to develop a flexible plan for achievable airport development in compliance with FAA and FDOT design standards, policies, and grant assurances. This airport master plan will be a "from scratch" process, as defined by FDOT in its airport master planning guidance.

While the airport master plan will focus on VRB, the recommendations from the airport master plan should also be incorporated into community planning. Information prepared as part of the airport master plan will be used by the City of Vero Beach to update its comprehensive plan related to VRB. **Figure 1.1** shows the anticipated flow of the airport master plan study process.

1.2. Airport Setting and Description

Airport Location

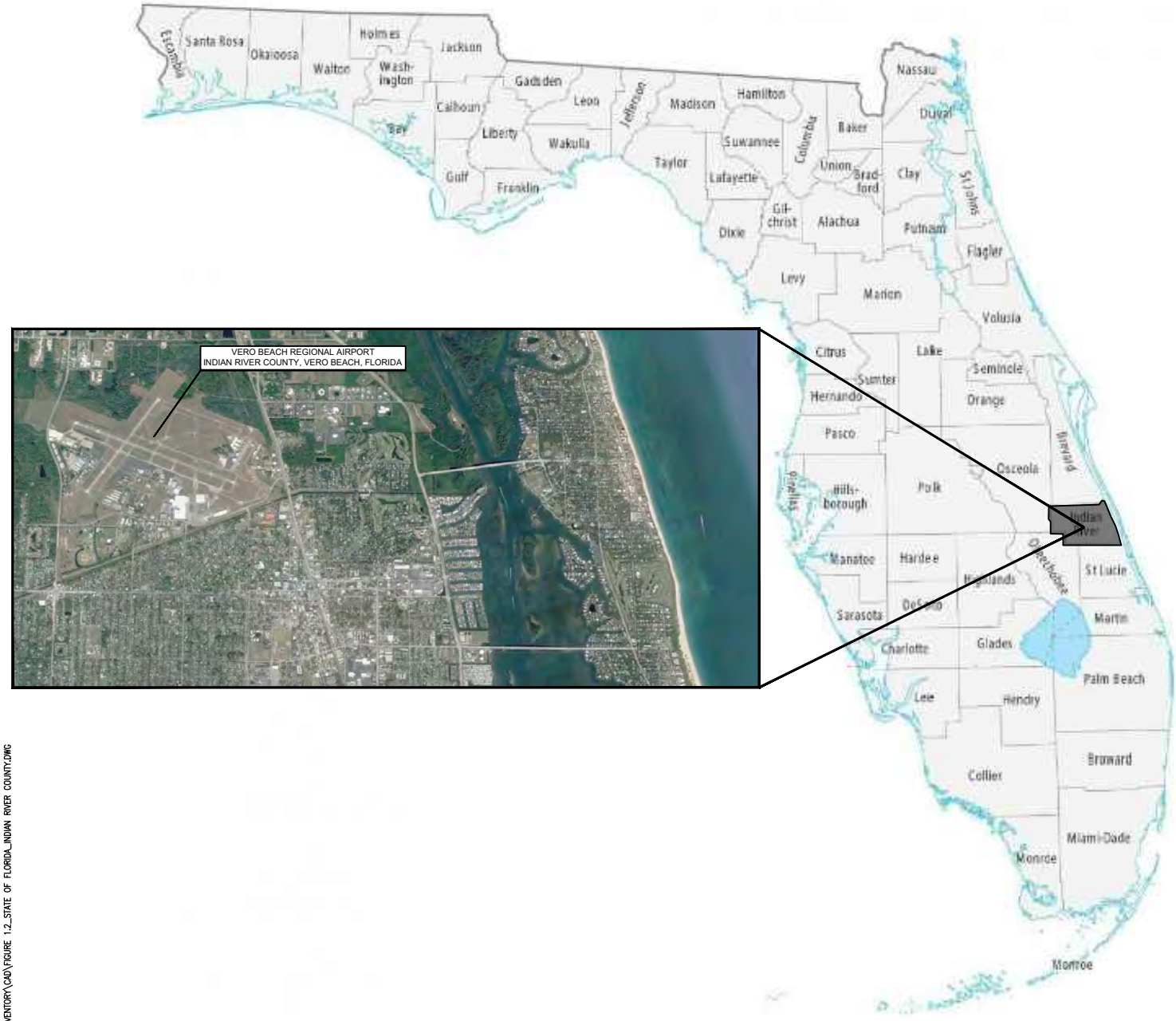
As shown on **Figure 1.2**, VRB is in Indian River County, on the east coast of Florida, within the area referred to as the Treasure Coast. VRB is approximately 4 miles inland from the Atlantic Ocean and approximately 6 miles east of Interstate 95. It is located between 43rd Avenue and U.S. 1, and north of State Road 60.

VRB is a public-use airport owned by the City of Vero Beach and is approximately 2 miles driving distance northeast of the central business district of Vero Beach.

The airport property consists of approximately 1,707 acres of land west of U.S. 1 and north of the Main Relief Canal. VRB is a tower-controlled airport supporting the movement of local and itinerant aircraft, business travel, flight training, recreational aviation, and other activities.

In addition to general aviation facilities, VRB is a certified Title 14 Code of Federal Regulations Part 139 airport and has provided support for commercial service flights. Elite Airways provided commercial service at VRB from 2017 to 2022. Since then, Breeze Airways began commercial service flights from VRB to Bradley International Airport (BDL) and Westchester County Airport (HPN) in February 2023. The past and future commercial service activity is detailed in Chapter 2: Aviation Activity Forecasts.

FIGURE 1.1: VRB AIRPORT MASTER PLAN PROCESS



Source: Google Earth, State of Florida, accessed November 2022.

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I:\20J065\20A0089W01\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.2_STATE OF FLORIDA_INDIAN RIVER COUNTY.DWG

VERO BEACH | HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	INDIAN RIVER COUNTY AND VRB LOCATION	DRAWN BY: JA CHECKED BY: SZ	FIGURE 1.2

Community Setting

Vero Beach is the county seat and a community of approximately 15,000 people. It is 190 miles south of Jacksonville and 135 miles north of Miami.[1] As described in the City of Vero Beach Annual Comprehensive Financial Report, Fiscal Year ended September 30, 2021, "The City of Vero Beach and Indian River County rely on three primary economic activities: tourism, retirement and agriculture (which has declined in recent years). In addition to these economic drivers, the area has seen an increase in the healthcare and retail industries. Vero Beach is a family oriented community. Sunny beaches, beautiful weather and low-density housing attract tourists and future residents. In addition to its natural beauty, the City of Vero Beach has a vibrant arts and cultural scene which appeals to both visitors and residents. Retirees are attracted by the climate and general lifestyle in Vero Beach. The median age in Indian River County was 47 in 1980, 47 in 2000 and 54.5 in 2019, as compared to the median age of 42.4 for the State of Florida as a whole in 2019."[2] Vero Beach is a desirable community and has continued to grow, as detailed in the socioeconomic section of Chapter 2.

Environmental Setting

Per the KVRB Habitat Conservation Plan, "KVRB is surrounded by vacant undeveloped land, both residential and commercial developments, municipal services, as well as recreational facilities. Included in these uses are drainage facilities, roadway, uplands and wetlands."[3] The site elevation on the airport ranges from 15 feet to 24 feet mean sea level (MSL). Per the U.S. Department of Agriculture Soil Survey of Indian River County, the natural soils on VRB are varied, ranging from isolated wetland to upland flatwoods and sand ridge soils. There are also fill areas on VRB.[4] The KVRB Habitat Conservation Plan addressed the implementation of the airport's wildlife management plan and potential future expansion. Species addressed in this study included scrub jays, eastern indigo snake, wood stork, and gopher tortoise. As part of this airport master plan, an environmental overview addressing each of the FAA's 18 environmental impact categories will be prepared. The information on the known environmental conditions will be considered in the alternatives analysis to minimize or avoid potential impacts.

1.3. History of Airports

The history of the modern airport traces back to 1909, when Wilbur Wright helped create the College Park Airport in Maryland. Since then, the functions of airports in the United States have evolved significantly. Many of today's airports began as private landing strips or military airfields. Beginning in 1918, many of these private landing areas were used by the Post Office Department for the delivery of mail by air. This continued until 1927, when the air mail service transferred from government to commercial operators. By this time, a transcontinental airmail route was established. Today's modern aviation system grew from these humble beginnings, and now, airports of all sizes provide a variety of services across the country.

[1] https://www.covb.org/391/About-Vero-Beach, accessed January 6, 2023.
[2] City of Vero Beach Annual Comprehensive Financial Report, Fiscal Year ended September 30, 2021, 9000.08 - Miscellaneous Pages (2021 Audit - City of Vero Beach 549772 [9/30/2021] (In Process)) (covb.org), accessed January 6, 2023.
[3] KVRB Habitat Conservation Plan by Florida Environmental Consulting Inc., September 14, 2016.
[4] KVRB Habitat Conservation Plan by Florida Environmental Consulting Inc., September 14, 2016.

1.4. History of VRB

VRB opened in 1929 with the help of the Chamber of Commerce, which raised money to construct the approximately 100 acres of pasture into a proper landing field with three grass runways and several hangars[5]. By the early 1930s, VRB attracted the attention of Eastern Air Lines, because the airport provided fuel for aircraft on its Post Office route between Miami and Jacksonville.[6] This led to Vero Beach becoming the second eastern Florida coastal city and smallest U.S. city to have airmail service.[7]

The first military use of VRB was in 1935, when the U.S. Army Air Corps used the facility for war games. It had more than 200 aircraft at VRB and constructed the first paved runway.[8]

In 1942, the U.S. Navy selected the airport for a flight training base known as Naval Air Station (NAS) Vero Beach. The Navy purchased an additional 1,500 acres for the NAS.[9] The property expanded to include self-sustaining facilities. Flight training started at NAS in 1943. At its busiest, the NAS had 1,400 servicemen and 250 based aircraft. The flight training at the NAS ended August 14, 1945, and in June 1946, the Vero Beach NAS was placed in caretaker status. In October 1947, the United States deeded more than 2,000 acres containing the airport to the City of Vero Beach.[10] **Figure 1.3** shows the NAS facilities at Vero Beach.

FIGURE 1.3: 1945 VERO BEACH NAS IN 1945

Source: Vero Beach Regional Airport, 2022.

Since World War II, VRB has been home to several flight training schools and aircraft manufacturing facilities. In 1957, Piper Aircraft selected VRB as a research and development center and moved its administrative and manufacturing divisions to the airport in 1961.

[5] Local History: Vero Beach Regional Airport, Local history: Vero Beach Regional Airport (msn.com), accessed December 7, 2021.
[6] Local History: Vero Beach Regional Airport, Local history: Vero Beach Regional Airport (msn.com), accessed December 7, 2021.
[7] Images of America Vero Beach by Teresa Lee Rushworth, 2014.
[8] Vero Beach Historical Series, Vero Beach Regional Airport, https://www.sunaviation.com/, accessed December 27, 2022.
[9] A Brief History of Vero Beach, Sebastian & Indian River County | VeroBeach.com, accessed December 19, 2022.
[10] Vero Beach Regional Airport Property Map, September 2016.

FlightSafety International established a training school at VRB in 1966. **Figure 1.4** shows VRB in 1967. The FlightSafety International facilities at VRB were acquired by Skyborne Airline Academy in 2021. Paris Air also provides flight training at VRB with more than 50 aircraft. Skyborne and Paris Air offer housing options for their students, thus attracting students from around the United States and abroad to VRB. The Skyborne housing is adjacent to VRB.

FIGURE 1.4: VERO BEACH MUNICIPAL AIRPORT 1967

Source: Vero Beach Regional Airport, 2022.

VRB has continued to transition from its NAS configuration to the present airfield with three runways. The longest is 7,314 feet by 100 feet, as shown on **Figures 1.5** through **1.7**. Significant changes to the airfield include the start of the north hangar development, shown in the 1974 aerial photo; use of only two runways by the 1984 aerial photo (what are now the primary and crosswind runways); development of the parallel runway and full-length parallel taxiways for all runways by the 1994 aerial photo; development of the new air traffic control tower (ATCT) by the 2004 aerial photo; and ongoing hangar and nonaeronautical development through the years. In 2015, the name of the airport was changed from Vero Beach Municipal Airport to Vero Beach Regional Airport. This renaming coincided with the start of scheduled jet service and reflects the broad reach and impact the airport has on the surrounding area.

FIGURE 1.5: VRB 1974 AND 1984

1974

1984

Source: Vero Beach Regional Airport, 2022.

FIGURE 1.6: VRB 1994 AND 2004

1994

2004

Source: Vero Beach Regional Airport, 2022.

FIGURE 1.7: VRB 2014 AND 2021

2014

2021

Source: Vero Beach Regional Airport, 2022.

1.5. Federal Aviation Administration

The FAA is part of the U.S. Department of Transportation. The mission of the FAA is to provide the safest, most efficient aerospace system in the world. The FAA is made up of multiple lines of business. The most common line of business that airports interact with is the Airports Division; for VRB, this is the Orlando Airports District Office (Orlando ADO) and Southern Region, located in College Park, Georgia. The role of the FAA Airports organization is to provide leadership in planning and developing a safe and efficient national airport system to satisfy the needs of aviation interests of the United States. Pilots may also commonly interact with a Flight Standards District Office for licensing and aircraft standards.

1.6. National Plan of Integrated Airport Systems

The FAA established and maintains the National Plan of Integrated Airport Systems (NPIAS), a system plan for the nation's airports. The NPIAS identifies 3,287 existing airports that are significant to our national air transportation system. The NPIAS also identifies the roles that each airport serves. Airports included in the NPIAS are eligible for federal funding under the FAA's Airport Improvement Program (AIP). The FAA updates the NPIAS every two years and issues a report to Congress, which includes the capital development needs of the system's airports.

VRB is classified in the 2023–27 NPIAS as a publicly owned, nonprimary commercial service airport with at least 2,500 annual scheduled commercial service enplanements but less than 10,000. Primary airports are those with at least 10,000 annual passenger enplanements.

In 2012, the FAA conducted a study on the general aviation airports within the NPIAS. "General Aviation Airports: A National Asset" is an in-depth analysis that highlights for the traveling public the important role general aviation airports play in our society, economy, and the aviation system. General aviation airports support all civil aviation operations other than scheduled air services and nonscheduled air transport operations for hire. These airports provide the principal means for linking the local and regional community with the national airport system. General aviation airports support business travel, flight training, medical flights, aerial agricultural application, law enforcement, and disaster relief and provide access to remote areas. The ability to move people and goods quickly means general aviation airports increase a community's competitive advantage by assisting in keeping and attracting businesses. This report classified general aviation airports by their roles within the national aviation system.

VRB is a national nonprimary airport. National airports "support the national airport system by providing communities access to national and international markets in multiple States and throughout the United States. National airports have very high levels of aviation activity with many jets and multiengine propeller aircraft. "[11] National airports account for 3.2% of NPIAS airports. The FAA reviews and updates these classifications as part of the biennial NPIAS updates.

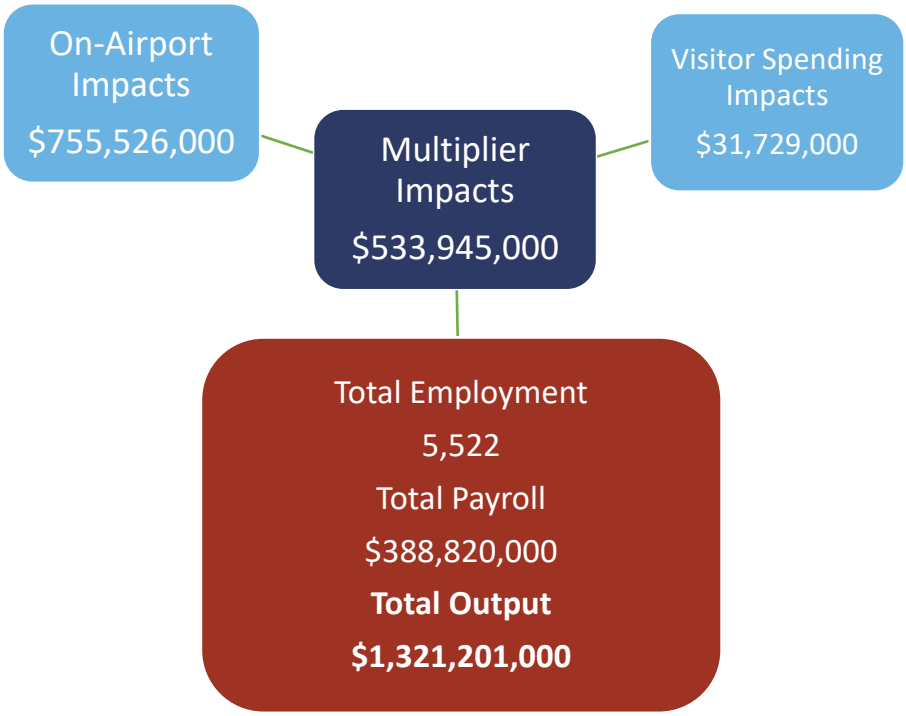
[11] Airport Categories | Federal Aviation Administration (faa.gov), accessed December 19, 2022.

1.7. Florida Aviation System Plan

Florida uses a continuing aviation system planning process to keep the Florida Aviation System Plan (FASP) current with changes in aviation by periodically updating the FASP. The designated current FASP is FASP 2035. VRB is in FDOT District 4, the Treasure Coast Continuing FASP Planning Process Region and the Florida Economic Development Council Southeast Region. Since the most recent FASP update, VRB has been reclassified by the FAA from a regional to a national nonprimary airport. The FASP indicates that "The airport currently serves medium to high levels of flight training, recreational/sport, tourism, corporate, and air charter activity in addition to business/recreational services. The analysis indicates that the airport is well positioned to continue serving these GA and commercial service demands throughout the planning period." [12]

With the wide variety of aviation and nonaviation activities at VRB, it generates a significant economic impact for the community, as shown on **Figure 1.8**. The on-airport impacts include on-airport spending. The visitor spending impacts represent the off-airport impacts attributable to VRB. Both types of impacts have a multiplier effect, because the money circulates in the community that is included in the total employment, payroll, and output figures. In 2022, an updated economic impact report was released. However, on March 14, 2023, the 2022 economic impact report was an executive summary that included statewide economic data but did not include all the individual airport breakdown data. It is anticipated that all the individual airport data should be available in the near future. Should the data become available before the completion of this airport master plan, the data will be updated.

FIGURE 1.8: VRB ECONOMIC IMPACT



Source: The Economic Impact of Vero Beach Regional Airport, FDOT, March 2019, Florida Statewide Economic Impact Study (fdot.gov), accessed December 20, 2022.

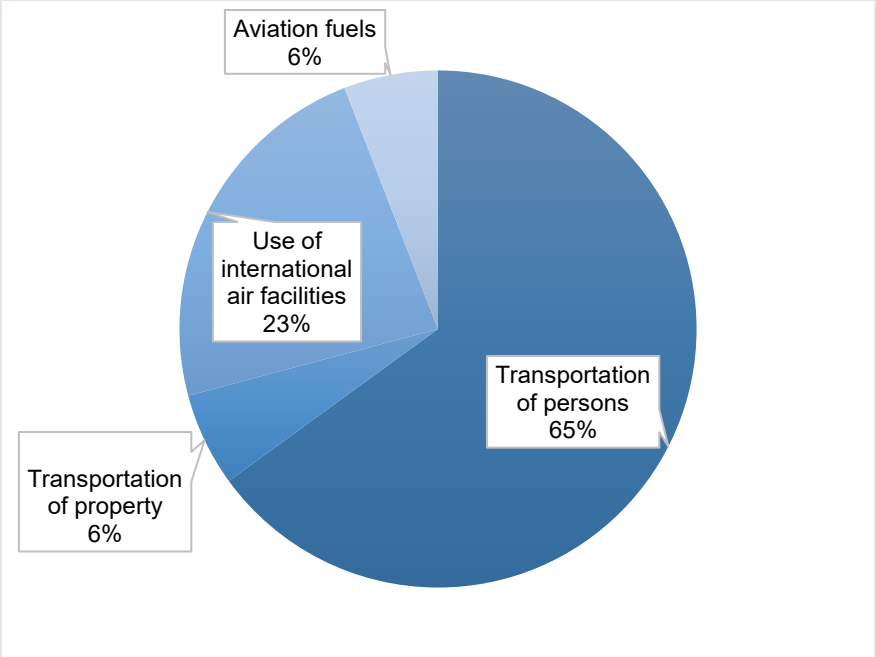
[12] FASP 2035, Vero Beach Regional Airport.

1.8. Funding Airports

Airport Improvement Program

The FAA's Airport Improvement Program (AIP) was established by the Airport and Airway Improvement Act of 1982 to provide funding to airports on a priority-needed basis. The AIP is a user-funded program from the Airport and Airway Trust Fund (AATF). The AATF is funded by a variety of excise taxes paid by airport users and can be categorized into four groups: transportation of persons (passengers), transportation of property (cargo), use of international facilities, and aviation fuel.[13] Passenger ticket taxes account for the bulk of AATF. A breakdown of the tax revenue collected in 2021 is shown on **Figure 1.9**. The AATF is a dedicated funding source for the AIP, the FAA Facilities and Equipment account, which funds technological improvements to the air traffic control system, and the FAA Research, Engineering, and Development account. In recent years, the AIP has also received supplemental funding from the U.S. Treasury. In addition, the Infrastructure Investment and Jobs Act began investing $15 billion in airport infrastructure, $5 billion in airport terminals, and $5 billion in air traffic facilities starting in 2022.

FIGURE 1.9: 2021 AIRPORT AND AIRWAY TRUST FUND BREAKDOWN



Projects eligible for AIP grant funding are improvements that address airport safety, security, the preservation of assets, capacity, and environmental concerns. The FAA distributes AIP funds using a priority system based on the type of project and type of airport identified in the NPIAS. The priority system was most recently updated in *FAA Order 5090.5: Formulation of the NPIAS and ACIP* published September 3, 2019, the airport category is included in the project priority number formula for grant funding.

Primary and commercial service entitlements are based on enplaned passenger levels. The entitlement level is based on the prior calendar year's (CY) enplanements. For example, FY 2022 entitlements were based on CY 2020 enplanements. The minimum entitlement for an airport with scheduled or unscheduled air service from a larger certificate air carrier with more than 10,000 enplanements in the calendar year used to calculate the entitlement level is $1 million; for a commercial service airport with between 2,500 and 10,000 enplanements, it is $600,000. During the pandemic, additional years were used to establish entitlement levels to reduce the impact of the pandemic on smaller airports.

A nonprimary entitlement of up to $150,000 per year is granted to nonprimary airports under the current legislation when the minimum AIP authorization levels are met and the airport demonstrates the need for at least an average of $150,000 of eligible capital needs per year over a five-year capital improvement program submittal. The nonprimary entitlement can be saved for up to four years for larger projects. The funds expire after four

[13] Airport and Airway Trust Fund (AATF) Fact Sheet, July 2022, PowerPoint Presentation (faa.gov), accessed December 27, 2022.

years. For most years, VRB has received the nonprimary entitlement of $150,000. In FY 2020, based on prior year enplanements, VRB qualified for and received $1 million in entitlement.

States also receive an apportionment to distribute to nonprimary airports based on the population of the state and number of airports. For high-priority projects, nonprimary airports can also compete for FAA AIP discretionary funds. In the last five years, VRB has received $12 million in discretionary grants for runway, taxiway and apron rehabilitation projects from 2013 through 2021.

Federal

The nonprimary entitlement category was introduced in 2012 as a part of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century, specifically to assist NPIAS-listed nonprimary airports with needed airport improvements. Typically, the federal share is 90% for AIP grants; however, during the COVID-19 pandemic, special legislation allowed for 100% federal share in 2020 and 2021, as well as other special grant programs to support airport operational expenses.

Grant Assurances

In accepting an AIP grant, the airport sponsor also accepts a series of grant assurances or obligations. These obligations require the recipients to maintain and operate their facilities safely and efficiently and in accordance with specified conditions. The duration of these obligations depends on the type of recipient, the useful life of the facility being developed, and other conditions stipulated in the assurances. There are 39 grant assurances.

State Funding

The FDOT Aviation Office "develops the Florida Aviation System Plan, promotes the development and improvement of Florida's airports, regulates airports, and protects airport approaches. Major activities include aviation system development, aviation grant program, airport regulation, intergovernmental coordination, aviation outreach and aviation emergency operations."[14] FDOT's Aviation Grant Program provides financial assistance to Florida's airports for the planning, design, construction, and maintenance of public-use aviation facilities. The funds come from the State Transportation Trust Fund, with aviation contributing an excise tax of 4.27 cents per gallon on aviation fuels.[15] The amount of the

[14] https://www.fdot.gov/aviation/default.shtm, accessed December 22, 2022.
[15] https://www.fdot.gov/aviation/fundinginfo.shtm, accessed December 22, 2022.

GRANT ASSURANCES

1. General Federal Requirements
2. Responsibility and Authority of Sponsor
3. Sponsor Fund Availability
4. Good Title
5. Preserving Rights and Powers
6. Consistency with Local Plans
7. Consideration of Local Interest
8. Consultation with Users
9. Public Hearings
10. Metropolitan Planning Organization
11. Pavement Preventive Maintenance
12. Terminal Development Prerequisites
13. Accounting System, Audit and Record Keeping Requirements
14. Minimum Wage Rates
15. Veteran's Preference
16. Conformity to Plans and Specifications
17. Construction Inspection and Approval
18. Planning Projects
19. Operation and Maintenance
20. Hazard Removal and Mitigation
21. Compatible Land Use
22. Economic Nondiscrimination
23. Exclusive Rights
24. Fee and Rental Structure
25. Airport Revenues
26. Reports and Inspections
27. Use by Government Aircraft
28. Land for Federal Facilities
29. Airport Layout Plan
30. Civil Rights
31. Disposal of Land
32. Engineering and Design Services
33. Foreign Market Restrictions
34. Policies, Standards and Specifications
35. Relocation and Real Property Acquisition
36. Access by Intercity Buses
37. Disadvantaged Business Enterprises
38. Hangar Construction
39. Competitive Access

excise tax is fixed, unless changed by legislation. For commercial service airports with 100,000 or more enplanements, FDOT can provide up to 50% of the nonfederal share as a match (5% when the federal grant is 90%). For general aviation airports and commercial service airports with less than 100,000 enplanements, FDOT may provide up to 80% of the nonfederal share as a match (8% when the federal grant is 90%).

Per the FDOT aviation grant program website, additional grant funding opportunities include:

- Up to 50% of the costs for on-airport, revenue-producing projects
- Up to 100% for strategic airport investment projects at commercial service and general aviation airports that:
    - Provide important access and on-airport capacity improvements.
    - Provide capital improvements to strategically position the state to maximize opportunities in international trade, logistics, and the aviation industry.
    - Achieve state goals of an integrated intermodal transportation system.
    - Demonstrate the feasibility and availability of matching funds through federal, local, or private partners.

The *Florida Aviation Project Handbook* provides details on the state grant funding program. Airports can also pursue loan funding for projects through the state-funded infrastructure bank. State grants also have associated grant assurances as detailed in the *Florida Aviation Project Handbook.*

Local Funding

Even with grant funding programs, a portion of the eligible project must be funded with local dollars. The investment in the local share allows an airport sponsor to achieve a greater return through the investment of grant dollars in its airport. Local funds are also used for ongoing operational costs and routine maintenance. In addition to funds, an airport sponsor may invest in-kind services in a project. The FAA regulates how airport revenue (those revenues paid to or due to the airport sponsor for use of airport property by the aeronautical and nonaeronautical users of the airport, revenue from the sale of airport property, and resources and revenue from state and local taxes on aviation fuel[16]) can be used. The FAA requires all revenue generated by an airport to be spent on the capital and operating expenses of the airport as outlined in *FAA Order 5190.6B: Airport Compliance Manual*, Chapter 15.

1.9. FAA Design Standards

The FAA establishes standards for the planning, design, and construction of airports. There are design standards for practically every facet of an airport in a series of documents called advisory circulars (AC). Several ACs are referenced during this study, but the primary one will be *FAA AC 150/5300-13B: Airport Design*, which contains the FAA design standards for the geometric layout of runways, taxiways, aprons, and other airport facilities. FAA AC 150/5300-13B was released in March 2022, replacing FAA AC 150/5300-13A, Change 1.

The FAA Airports Division has also developed a series of standard operating procedures (SOPs) to uniformly apply the standards in the ACs across the multiple Airports Division regions. *FAA SOP 2.00: Standard Procedure for FAA Review and Approval of Airport Layout Plans and FAA SOP 3.00: Standard Operating Procedure for FAA Review of Exhibit "A" Airport Property Inventory Maps* will be referenced during this study.

[16] *FAA Order 5190.6B: Airport Compliance Manual*, Chapter 15, https://www.faa.gov/documentlibrary/media/order/5190_6b.pdf, accessed January 10,2023.

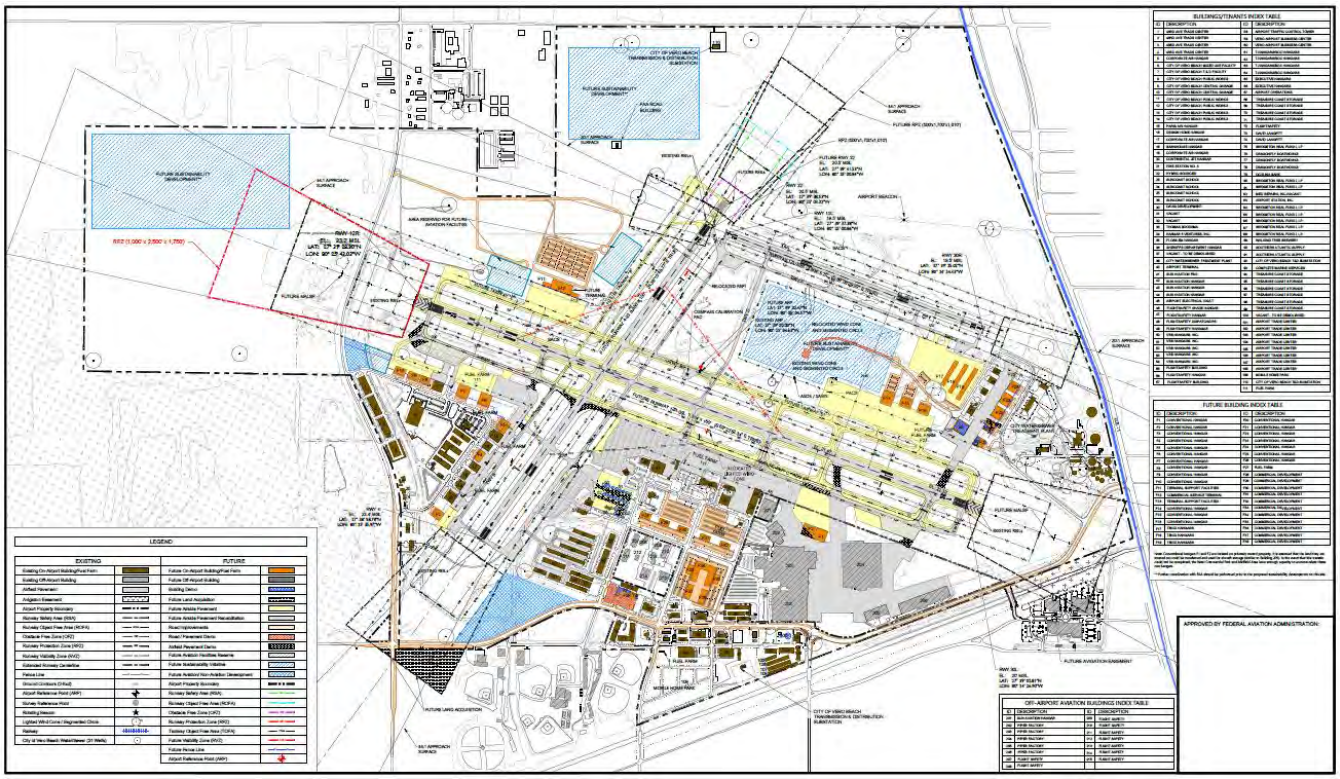
1.10. Airport Layout Plan

The ALP is a set of drawings that provides a graphic representation of the airport sponsor's long-term development plan for an airport. The ALP shows the details of the major components of the airport, including runways, taxiways, aprons, and hangar areas, as well as safety areas, runway approach and departure surfaces, and other FAA design standards. In addition to identifying the long-term development for VRB, the ALP update also meets the FAA grant assurance to keep the ALP document up to date, showing existing and proposed conditions at the airport. The sponsor must meet the grant assurances to continue to be eligible for federal grant funding for airport development.

1.11. Previous Airport Layout Plan

The most recent FAA-approved ALP for VRB was completed in 2016. Since the completion of this ALP, several proposed airfield improvements have been completed. In 2017, a ramp expansion was constructed for Corporate Air. In 2019, the extension of parallel Taxiway E from Taxiway D to the Runway 30L end was constructed. In 2021, the Taxiway E ramp and two connector taxiways were constructed on the north side of Taxiway E to provide access to the box hangars, and in 2022, the second phase of the Taxiway E ramp was constructed. These completed projects were depicted on the 2016 ALP update, shown on **Figure 1.10**. The Exhibit "A" property map was also updated during the 2016 update to reflect any disposal and acquisition of airport property. The ALP drawing set and Exhibit "A" property map will be updated as a part of this study to reflect the proposed airport improvements identified in the facility requirements and alternatives analysis.

FIGURE 1.10: 2016 AIRPORT LAYOUT PLAN



Source: VRB Airport Layout Plan, Ricondo and Associates, September 2016.

1.12. Airport Master Plan Report

The airport master plan report documents the planning analysis. The airport master plan contains an executive summary with an overview of the proposed projects recommended in the plan; the basic aeronautical forecasts; alternatives/proposed development, including the rationale for any unusual design features or modifications to FAA design standards; a discussion of the obstruction evaluation surfaces and runway protection zones; a development summary; a tower shadow/line-of-site study; any government coordination letters; a review of wildlife hazard management issues; a preliminary identification of environmental features; any action items from the FAA runway safety program office; and any declared distances to be used on the runways. For VRB, the narrative report is organized in the following sections:

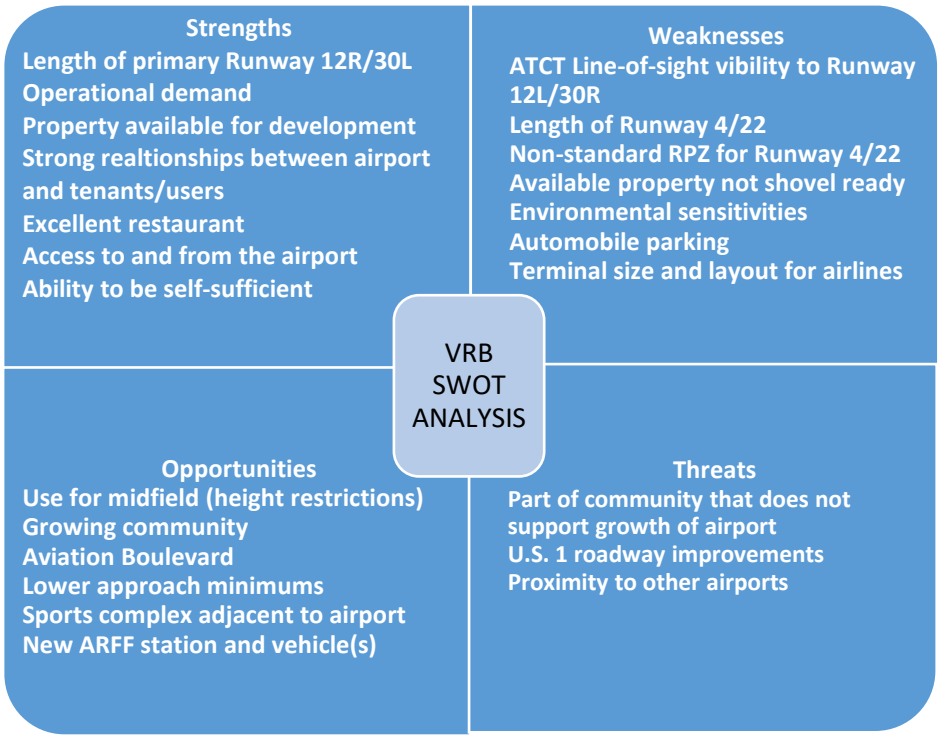
- Background and Inventory
- Aviation Activity Forecasts
- Facility Requirements
- Environmental Considerations
- Identification and Evaluation of Alternatives
- Facilities Implementation Plan
- Airport Layout Plan

A stormwater master plan is also being prepared for VRB under a separate document.

1.13. Strengths, Weaknesses, Opportunities, and Threats

A strengths, weaknesses, opportunities, and threats (SWOT) analysis was conducted with airport stakeholders as part of this planning study. SWOT analyses help define and develop long-term strategic planning. The outcomes of the VRB SWOT analysis are listed on **Figure 1.11**.

FIGURE 1.11: VRB SWOT ANALYSIS



1.14. Goals for VRB

Along with the SWOT analysis, a brainstorming session on potential improvements to be considered for VRB was conducted. Potential improvements to be evaluated during the master plan include:

- Extend/shift Runway 4/22
- Evaluate Runway 12L/30R length, potential need for or value of an extension
- New midfield aircraft rescue and firefighting (ARFF) facility
- Widen and extend taxiways B and E
- Bypass taxiway at end of Runway 12R
- Terminal building expansion
- Potential need for a parking garage and other parking and access improvements
- Obstruction removal/management
- Additional hangar/T-hangar development
- Perimeter road around entire airport
- Pedestrian safety improvements (lighted signs and crosswalks)
- Development potential on north side of the airport
- Providing shovel-ready properties for development
- Aligning airport growth with community plans for community benefit

Other potential improvements may be identified and studied during the facility requirements analysis.

1.15. Surrounding Areas

As a community asset, VRB is included in the City of Vero Beach Comprehensive Plan, adopted April 4, 2018. **Figure 1.12** depicts the land use on VRB and the surrounding area. VRB is located along the northern and western edges of the city limits. The largest land use areas on VRB are transportation and conservation. There are also significant industrial/wholesale and educational areas on the airport, with some commercial areas along Aviation Boulevard. **Figure 1.13** shows the recommended future land uses on and around VRB. The comprehensive plan includes growth in the transportation and commercial use and reduction in the educational facilities and industrial/wholesale. The recommended future land uses for the airport property will be reviewed as part of the airport master plan study process. The rationale for any recommended changes will be documented for use in a future comprehensive plan update.

There are three City of Vero Beach light industrial districts on the airport: ALI-1, ALI-A1 and ALI-A2. The City has also enacted airport zoning to provide airspace protection for and compatibility of land use with VRB to protect the federal, state, and local investment in the airport and the safe operation of the airport.

Just south of VRB is the Jackie Robinson Training Complex. The Los Angeles Dodgers leased and repurposed a part of the old Navy base to be its spring training facility starting in 1948, and in 1953, the stadium was constructed. In 1964, the Dodgers purchased 110 acres of land from the airport with federal approval. In 2008, the Dodgers relocated to spring training facilities in Arizona.[17] Today, the complex includes lodging, Homan Stadium, and training facilities to accommodate baseball, softball, football, lacrosse, soccer, rugby, rowing, and swimming (with the use of off-site facilities for water sports).

The areas north and west of VRB are outside the city limits. The Indian River County Jail is north of VRB on county-owned property. There is also a managed hazardous material plume northwest of VRB.

[17] https://www.walteromalley.com/en/dodgertown/dodgertown-timeline/1929-1939/view-all, accessed December 27, 2022.

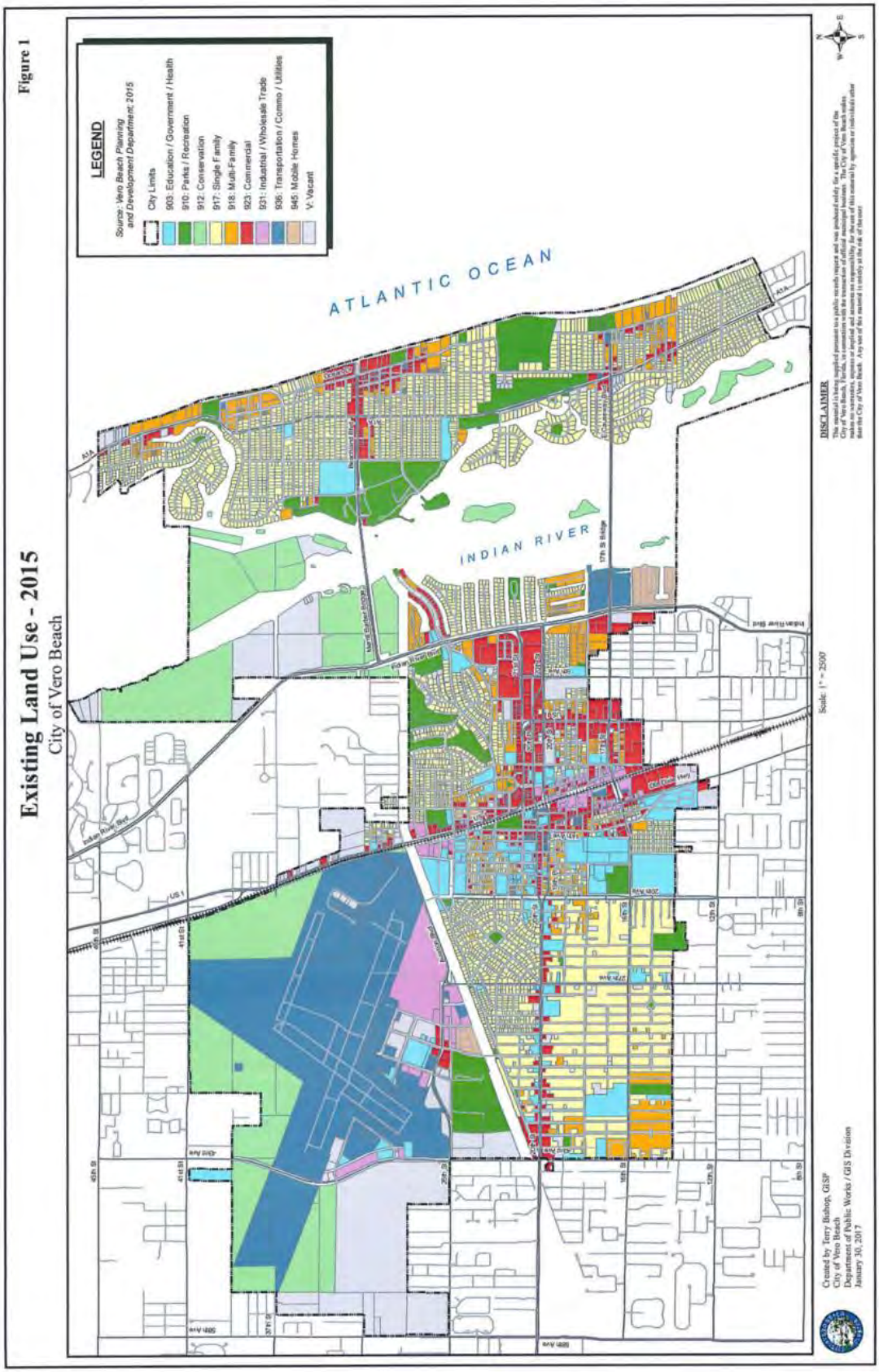


FIGURE 1.12: VERO BEACH COMPREHENSIVE PLAN EXISTING LAND USE

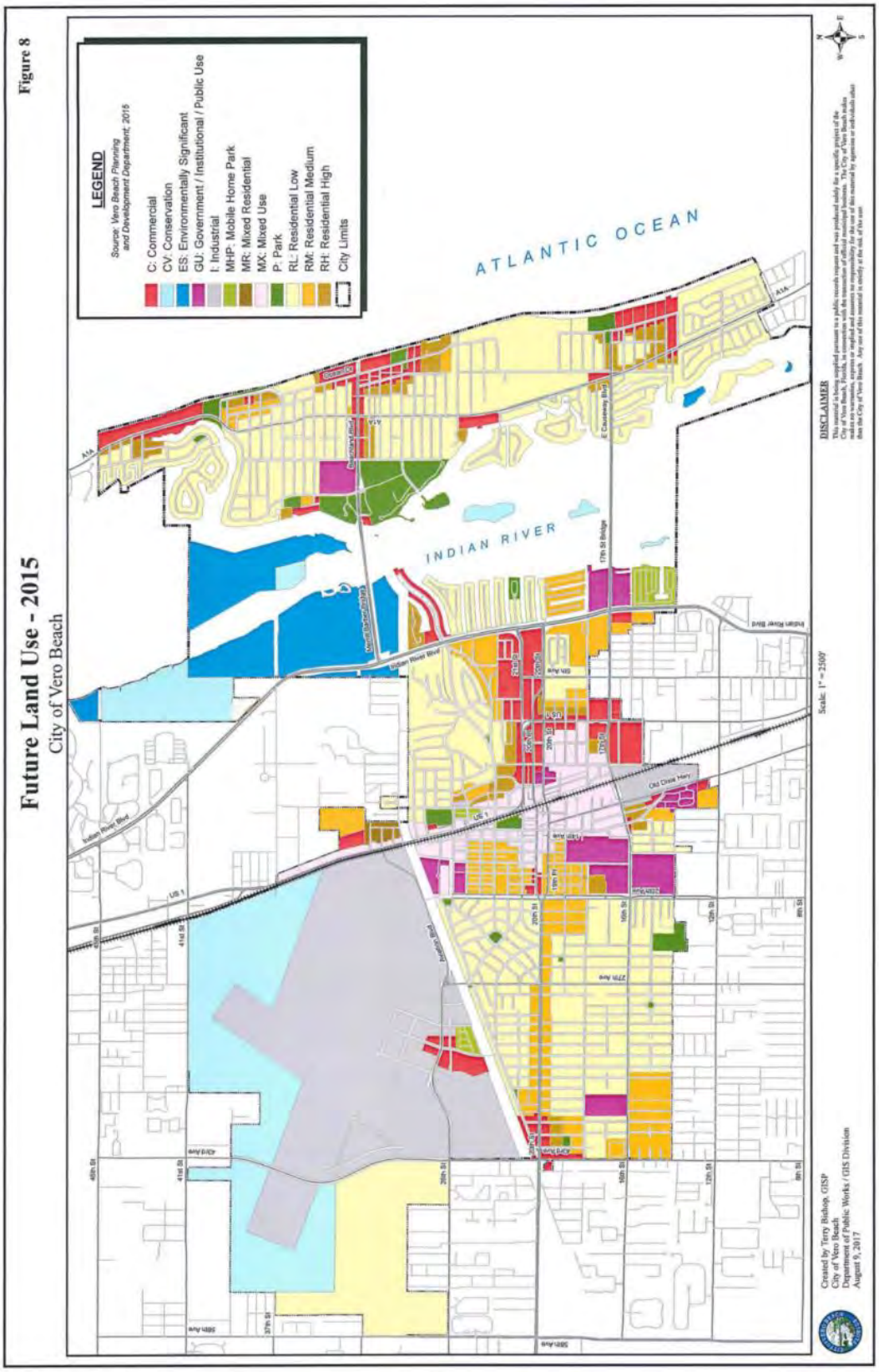


FIGURE 1.13: VERO BEACH COMPREHENSIVE PLAN FUTURE LAND USE

1.16. Airfield and Surrounding Airspace

Airfield facilities are planned and developed to accommodate the demand for current and future aircraft operations. These facilities include runways, taxiways, navigational aids (navaids), apron parking and tie-down areas, terminal areas, and T-hangar areas. **Figure 1.14** depicts major airfield facilities at the airport.

Airfield

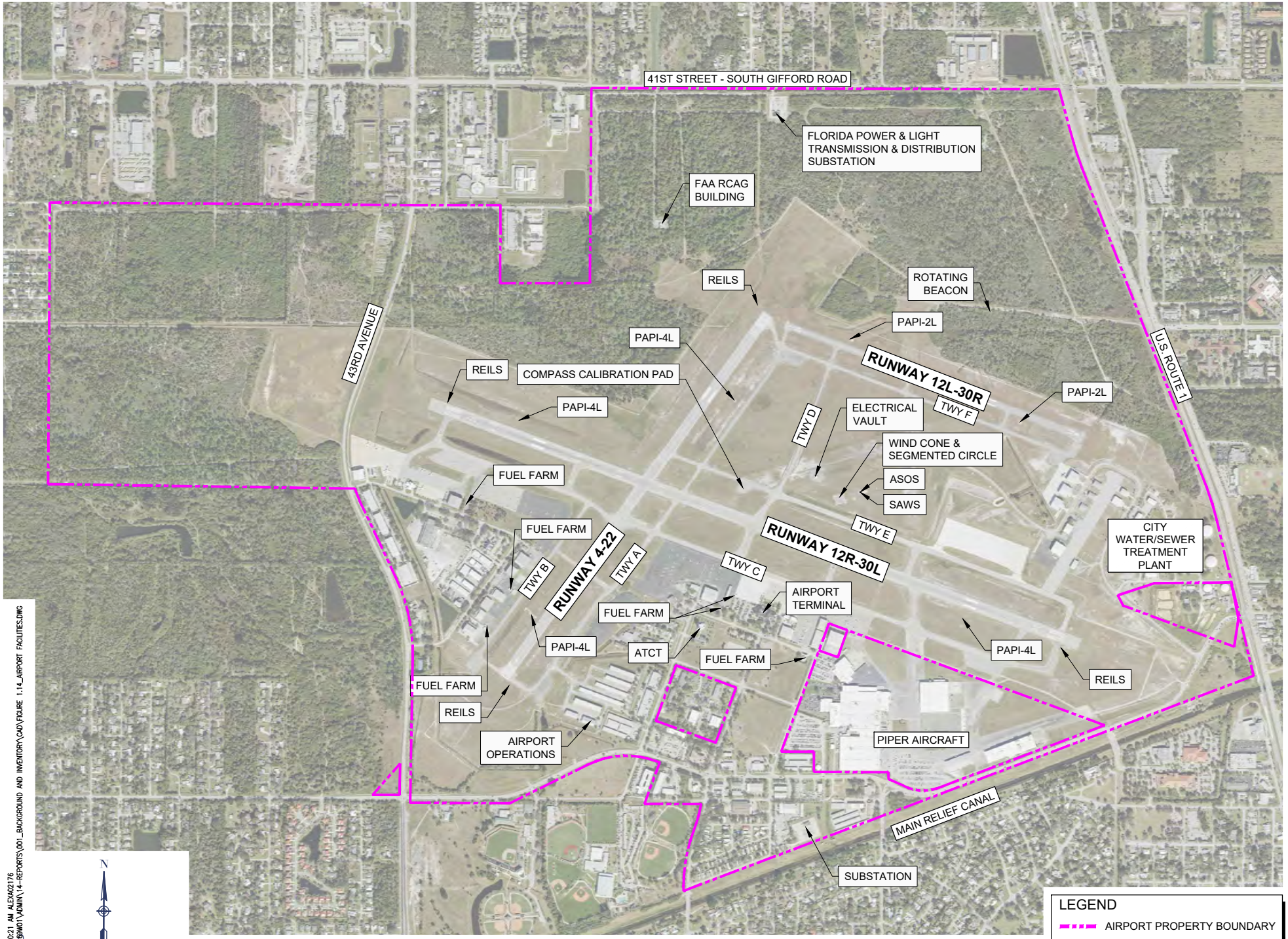
Runways

There are three runways at VRB: Runway 12R/30L, Runway 4/22, and Runway 12L/30R. Runway 12R/30L is 7,314 feet long by 100 feet wide and is designated as the primary and Part 139 runway. Declared distances are in use on the runway, reducing the accelerate stop distance and landing distance on Runway 30L to 7,276 feet due to objects off the end of Runway 12R. All other operations on Runway 12R/30Lcan use the full length of the runway. Runway 12R/30L was rehabilitated in 2022 with an asphalt overlay and is in excellent condition. The runway has a published pavement strength of 85,000 pounds for single wheel, 115,000 pounds for dual wheel, and 220,000 pounds for dual tandem. The Runway 12R end has precision instrument pavement markings, and the Runway 30L end has nonprecision instrument pavement markings. Both ends of the runway are equipped with runway end identifier lights (REILs). REILs are flashing strobe lights that assist the pilot upon approach in identifying the end of the runway. The runway is also equipped with four-box precision approach path indicators (PAPIs) that have a standard 3-degree glide path on both ends of the runway. PAPIs provide the pilot with visual vertical descent guidance and informs whether the pilot is above, below, or on the correct glide path angle upon approach to the runway. The edges of Runway 12R/30L are equipped with medium intensity runway lights (MIRLs).

Runway 4/22 is 4,974 feet long by 100 feet wide and operates as the crosswind runway. Declared distances are in use on the runway, reducing the accelerate stop distance and landing distance on Runway 22 to 4,945 feet due to objects off the end of Runway 4. All other operations on Runway 4/22 can use the full length of the runway. The runway is constructed with asphalt pavement and is in good condition. The runway has a published pavement strength of 30,000 pounds for single wheel, 115,000 pounds for dual wheel, and 220,000 pounds for dual tandem. The runway has nonprecision instrument pavement markings, and both runway ends are equipped with REILs. Both ends of the runway are equipped with four-box PAPIs that have a standard 3-degree glide path. The edges of Runway 4/22 are equipped with MIRLs. Runway 4/22 is not a Part 139 runway. Should this be desired in the future, runway safety area (RSA) grading improvements would be needed to meet FAR Part 139 standards. Also, the ARFF access road is located off the end of Runway 4.

Runway 12L/30R, designated as a utility runway, is 3,504 feet long by 75 feet wide and supports general aviation traffic and flight school operations. The runway is constructed with asphalt pavement and is in fair condition. The runway has a published pavement strength of 12,500 pounds for a single wheel. The runway has basic markings, and both ends of the runway are equipped with two-box PAPIs. The Runway 12L end has a standard 3-degree glide path, and the Runway 30R end has a 3.5-degree glide path. The edges of Runway 12L/30R are equipped with MIRLs.

An area navigation (RNAV) global positioning system (GPS) approach is available on both ends of Runway 4/22 and Runway 12R/30L. The RNAV approaches on these runways have a localizer performance with vertical guidance (LPV), which provides horizontal and vertical guidance to the pilot. LPVs are the most precise GPS instrument approach procedures available without specialized aircrew training. The Runway 12R LPV approach has descent minimums of 256 feet above ground level (AGL) and 3/4-mile visibility, and the Runway 30L LPV approach has descent minimums of 200 feet AGL and 3/4-mile visibility. The Runway 4 LPV approach has descent minimums of 297 feet 273 feet AGL and a 7/8-mile visibility, and the Runway 22 LPV approach has descent minimums of 317 feet AGL and a 1-mile visibility. Utility Runway 12L/30R has visual approaches on both runway ends. There are also very high frequency omnidirectional range (VOR) approaches with higher minimums to runways 12R and 30L.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, Florida Department of Transportation (FDOT), 2021.

AUG 12, 2024 10:21 AM ALEXA02176
I:\20J08S\20A0089W01\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.14_AIRPORT FACILITIES.DWG

VERO BEACH REGIONAL AIRPORT | HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	AIRPORT FACILITIES	DRAWN BY: JA CHECKED BY: SZ	FIGURE 1.14

Taxiways

Taxiway A is a full-length parallel taxiway on the east side of Runway 4/22. It is 50 feet wide south of Runway 12R/30L and 35 feet wide north of Runway 12R/30L. Including the runway end connectors, there are three connector taxiways and two parallel taxiways that provide access between Taxiway A and Runway 4/22. Starting from the Runway 4 end, they are designated as taxiways A (taxiway end connector), A1, and C, and two connectors on the Runway 22 end are designated taxiways E and A2. There is a run-up pad along Taxiway A at the south end and a shared pad with Taxiway F at the north end. Run-up pads are used by aircraft to conduct preflight engine and equipment checks and/or to hold for an instrument clearance.

Taxiway B is a partial parallel taxiway on the west side of the southern half of Runway 4. It is 35 feet wide. Starting on the Runway 4 end, the connectors are taxiways B (taxiway end connector), B1, and C.

Taxiway C serves as a full-length parallel taxiway for Runway 12R/30L, although there is a jog in the taxiway where it crosses Runway 4/22. Taxiway C is 50 feet wide. Starting from the Runway 30L end, the taxiway connectors are designated as taxiways C1, C2, C3, C4, D, and A, and the two connectors on the Runway 12R end are taxiways C5 and C6. Taxiway C1 can serve as a bypass taxiway for the end connector, and it provides a connection to the north ramp. There is a run-up pad near each end of Taxiway C.

South of Runway 12R/30L Taxiway D is 75 feet wide narrowing to 35 feet wide north of Runway 12R-30L. It provides crossfield access from the Skyborne apron south of Runway 12R/30L to runways 12L, 30R, and 22 on the north side of the airfield.

Taxiway E is a partial parallel taxiway to Runway 12R/30L. Taxiway E is 50 feet wide and provides access from Runway 4/22 to the Runway 30L end.

Taxiway F is a full-length parallel taxiway to Runway 12L/30R. Starting from the Runway 30R end, the taxiway connectors are taxiways F (taxiway end connector), F1, F2, D, and F (taxiway end connector on Runway 12L end). Taxiway F is 35 feet wide and has run-up pads on each end of the taxiway that provide space for aircraft run-up and staging.

All taxiway edges are equipped with medium intensity taxiway lights (MITL). To help avoid runway excursions and assist pilots in situational awareness, the latest FAA design standards recommend avoiding direct apron-to-runway access and requiring at least one 90-degree turn before reaching the runway. There are multiple taxiway connectors at VRB that provide a direct connection from an apron to a runway. Therefore, as part of the alternatives analysis, the direct apron-to-runway taxiway connectors will be assessed for potential improvements. The use and location of run-up pads will also be reviewed as part of the overall taxiway system.

Airfield Pavement Condition

The most recent airfield pavement condition index (PCI) analysis for VRB was completed in June 2022. PCI uses a visual inspection of pavement distress to evaluate the condition of the pavement and pavement management strategies to preserve the assets. The result of these evaluations provides a score ranging from 0 to 100 that provides a general gauge of the current operational condition. A score of 100 indicates like-new pavement, while a 0 indicates extremely high degradation.

FDOT created guidelines for the development of a major rehabilitation program that is based on the critical PCI concept: It is more cost-effective for the airport to maintain airfield pavement above, rather than below, its critical PCI. Per the 2022 VRB Airport Pavement Evaluation Report, FDOT identifies the critical PCI as 70 for a rehabilitation project. This critical PCI is based on the historic trends in airport pavement performance and statewide planning efforts. **Table 1.1** summarizes the FDOT PCI requirements for airfield pavement projects.

TABLE 1.1: FDOT RECOMMENDED MINIMUM PCI SERVICE LEVEL

FDOT PCI Requirements for Types of Airfield Pavement Projects	
Airfield Pavement Project Type	**PCI Requirements**
Reconstruction	PCI < 55 (Poor)
Rehabilitation	PCI < 70 (Fair)
Maintenance	N/A

Source: Airport Pavement Evaluation Report, Florida Department of Transportation: Aviation and Spaceports Office, June 2022.

In summary, airfield pavements at VRB are in satisfactory condition, with an area-weighted PCI of 81. In the 2022 pavement evaluation report, the major rehabilitation needs at VRB over the next 10 years are estimated at $75,497,000. Major rehabilitation needs are identified by analyzing the airport's pavement condition in relationship to the critical PCI values.[18] **Figure 1.15** depicts the pavement condition ratings at VRB in 2022. A detailed summary of the PCI section level is in **Appendix B**.

[18] Airport Pavement Evaluation Report, Florida Department of Transportation: Aviation and Spaceports Office, June 2022.

Source: Statewide Airfield Pavement Management Program: VRB Airport Pavement Evaluation Report, Florida Department of Transportation (FDOT), dated June 2022.

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AUG 12, 2024 10:23 AM ALEXA02176
I:\20JOBS\20A0089W01\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.15_PCI MAP.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	PCI MAP	DRAWN BY: JA	FIGURE 1.15
				CHECKED BY: SZ	

Navaids and Weather Equipment

There is an automated surface observing system (ASOS) in the midfield north of Runway 12R/30L, as depicted in **Figure 1.16**. The ASOS station provides essential weather observations for pilots, the National Weather Service, the FAA, and the Department of Defense. Weather data from the ASOS is available via telephone at (772) 978-9535, on radio frequency 120.575 MHz, or online. Co-located with the ASOS is the FAA stand-alone weather sensors (SAWS) system. The SAWS is a back-up system for the ASOS. Also in this area is the primary wind cone and segmented circle, as shown in **Figure 1.17**. The airfield electrical vault is also in this area, as shown in **Figure 18**.

FIGURE 1.16: ASOS

FIGURE 1.17: PRIMARY WIND CONE

FIGURE 1.18: ELECTRICAL VAULT

FIGURE 1.19: ROTATING BEACON

There is a rotating beacon on the northeast side of the airfield, north of Runway 12L/30R. As shown on **Figure 1.19**, a rotating beacon is a navaid generally installed on top of a towering structure, which operates with a rotating flashing light that indicates the location of the airport to pilots at night and periods of low visibility. As a civilian airport, the color of the VRB rotating beacon is white/green.

A remote communications outlet (RCO) and antenna is on the terminal building. When the ATCT is closed, the RCO provides a frequency (122.2 MHz) for pilots to use to contact the St. Petersburg Flight Service Station (FSS).

Airport Traffic Control Tower

VRB has an FAA-staffed ATCT southwest of the terminal. It is open from 7 a.m. to 9 p.m. daily. The tower frequency is 126.3 MHz, ground control is 127.45 MHz, and clearance delivery is 134.975 MHz. Approach and departure control is provided by air traffic control at Palm Beach International Airport. When the ATCT is open, the VRB ground control controller coordinates with Palm Beach for instrument departure clearances. When the tower is closed, pilots contact Palm Beach via phone at (561) 275-1430 or the FSS via the RCO. The first ATCT at VRB was constructed in 1973, and the current ATCT, shown on **Figure 1.20**, was opened in 2003. It was constructed with federal grant assistance. The tower needs a clear line of sight to all aircraft movement areas on the airfield (runways and taxiways). This limits the height of buildings between the parallel runways.

FIGURE 1.20: VRB ATCT

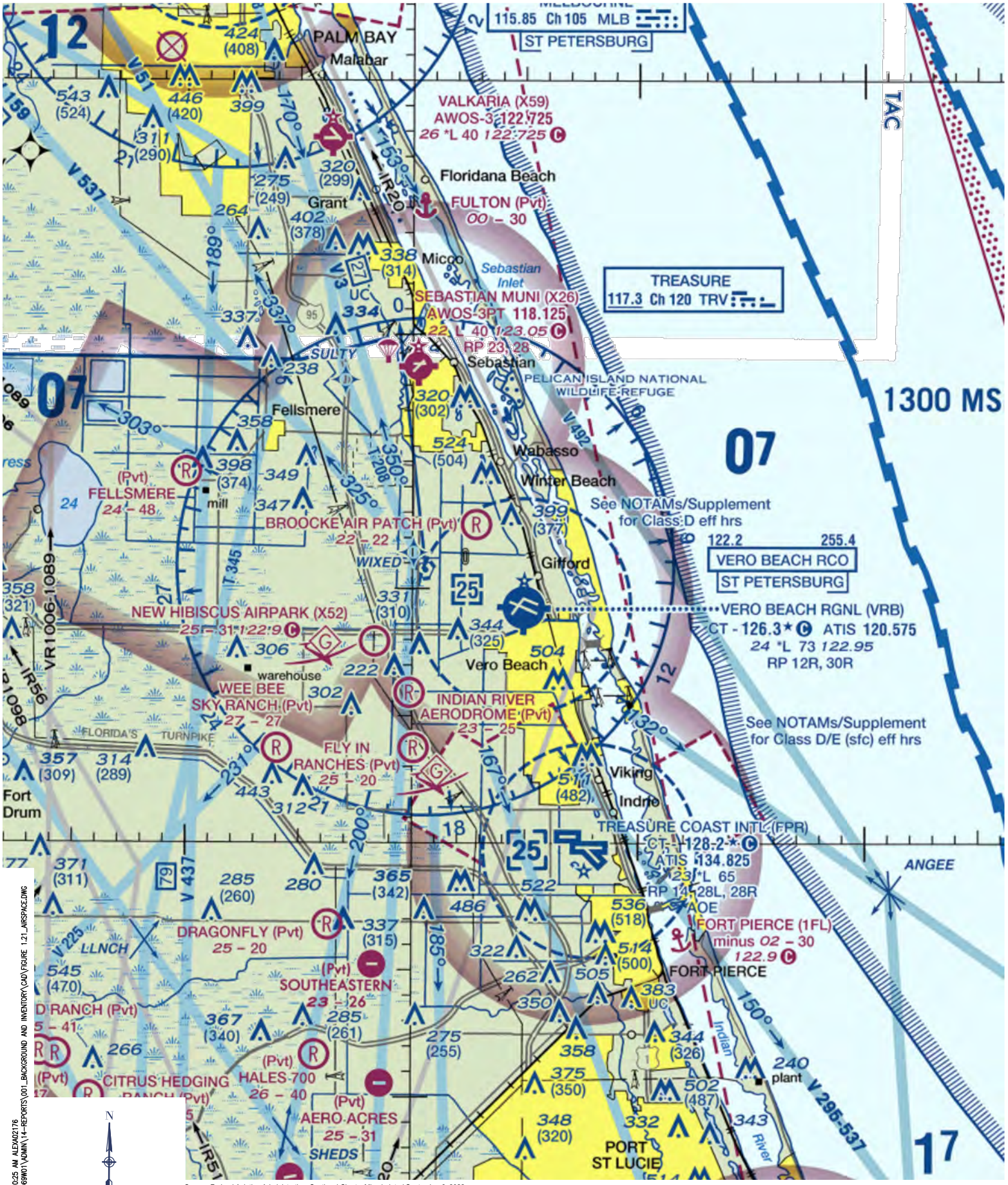
Airspace

There are four types of airspace: controlled, uncontrolled, special use, and other. Controlled airspace is a generic term that covers the different classifications of airspace and defined dimensions within which air traffic control (ATC) service is provided. Controlled airspace consists of classes A, B, C, D, and E. Uncontrolled airspace, or Class G airspace, is the portion of airspace that has not been otherwise designated. When the ATCT is open, VRB is surrounded by Class D airspace, from the ground up to 2,500 feet AGL within a 4-nautical-mile radius of the airport, as indicated by the blue dashed circle, and Class E airspace up to 18,000 feet AGL (floor of Class A) above Class D. When the ATCT is closed, VRB is surrounded by Class E airspace. The airspace around VRB is shown in the center of the map on **Figure 1.21**.

Additional special use airspace close to VRB includes the Air Defense Identification Zone of North America (ADIZ) and Warning Area 497-B. The ADIZ begins approximately 5 miles offshore from the coast, and its purpose is to identify, locate, and control aircraft entering the U.S., except DOD and law enforcement, for national security purposes. Warning Area W-497B is east of VRB and begins approximately 2 miles offshore from the coast. This airspace is an active national defense operating area and contains activity that may be hazardous to nonparticipating aircraft.

1.17. Airside Facilities

The airside facilities include on-airport businesses with airside access, aircraft storage facilities, and all airport-owned support facilities with airside access. As shown on **Figures 1.22** through **1.24**, there are 14 aeronautical businesses at VRB. The airport includes two fixed-base operators (FBOs), aircraft manufacturing, flight training schools, and aircraft storage. The following sections discuss each type of facility in more detail.



Source: Federal Aviation Administration, Sectional Charts: Miami, dated September 8, 2022.

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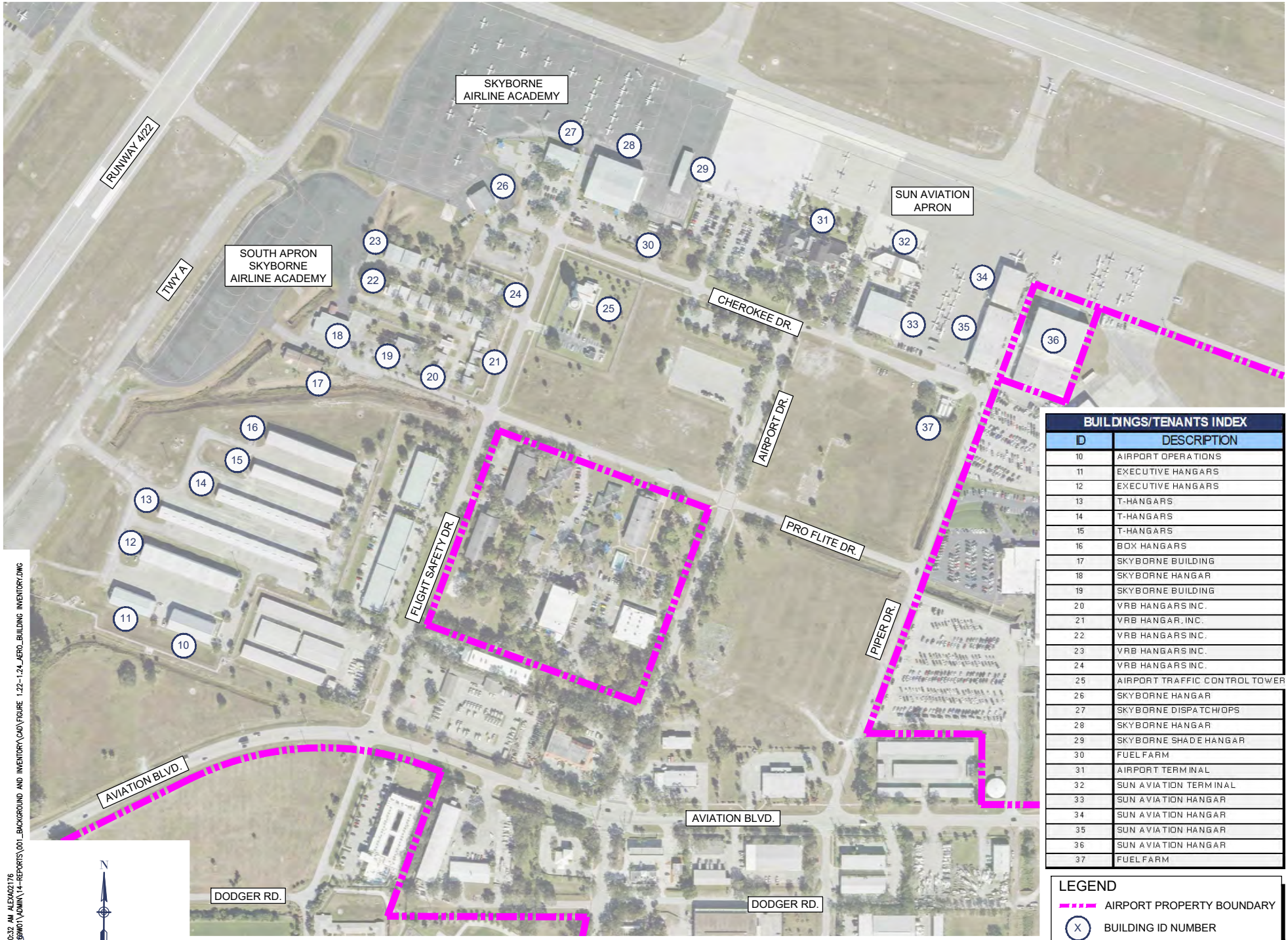
AUG 12, 2024 10:25 AM ALECIA02176
I:\20A065\20A065W01\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.21_AIRSPACE.DWG

VERO BEACH | HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	AIRSPACE	DRAWN BY: JA CHECKED BY: SZ	FIGURE 1.21



BUILDINGS/TENANTS INDEX	
ID	DESCRIPTION
10	AIRPORT OPERATIONS
11	EXECUTIVE HANGARS
12	EXECUTIVE HANGARS
13	T-HANGARS
14	T-HANGARS
15	T-HANGARS
16	BOX HANGARS
17	SKYBORNE BUILDING
18	SKYBORNE HANGAR
19	SKYBORNE BUILDING
20	VRB HANGARS INC.
21	VRB HANGAR, INC.
22	VRB HANGARS INC.
23	VRB HANGARS INC.
24	VRB HANGARS INC.
25	AIRPORT TRAFFIC CONTROL TOWER
26	SKYBORNE HANGAR
27	SKYBORNE DISPATCH/OPS
28	SKYBORNE HANGAR
29	SKYBORNE SHADE HANGAR
30	FUEL FARM
31	AIRPORT TERMINAL
32	SUN AVIATION TERMINAL
33	SUN AVIATION HANGAR
34	SUN AVIATION HANGAR
35	SUN AVIATION HANGAR
36	SUN AVIATION HANGAR
37	FUEL FARM

LEGEND

AIRPORT PROPERTY BOUNDARY

(X) BUILDING ID NUMBER

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 10:32 AM ALEXA02176
I:\20JOBS\20A0069WO1\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.22-1.24_AERO_BUILDING INVENTORY.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

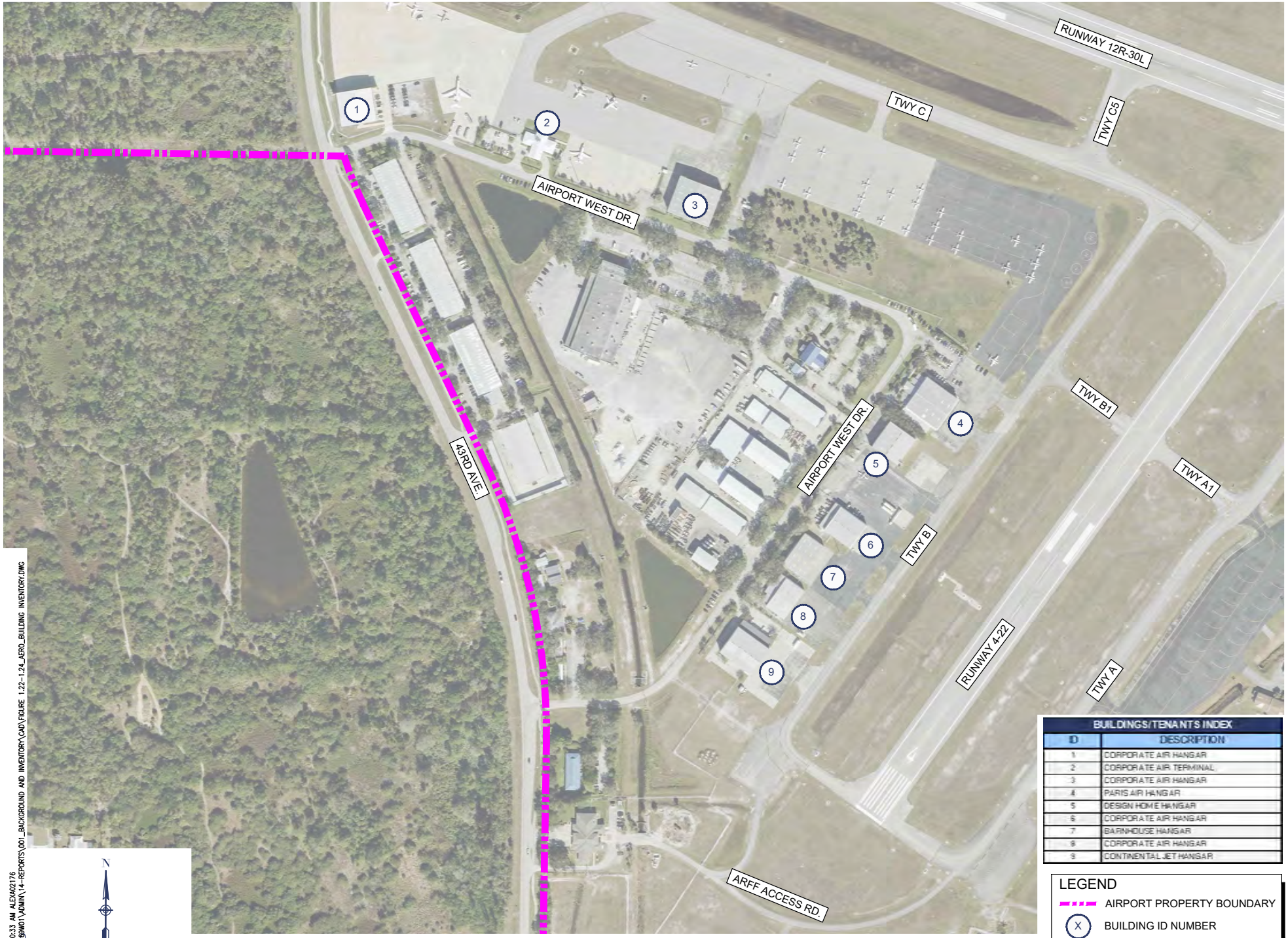
VERO BEACH REGIONAL AIRPORT MASTER PLAN

AIRSIDE - SOUTH

DRAWN BY: JA

CHECKED BY: SZ

FIGURE 1.22



BUILDINGS/TENANTS INDEX	
ID	DESCRIPTION
1	CORPORATE AIR HANGAR
2	CORPORATE AIR TERMINAL
3	CORPORATE AIR HANGAR
4	PARIS AIR HANGAR
5	DESIGN HOME HANGAR
6	CORPORATE AIR HANGAR
7	BARNHOUSE HANGAR
8	CORPORATE AIR HANGAR
9	CONTINENTAL JET HANGAR

LEGEND

AIRPORT PROPERTY BOUNDARY

(X) BUILDING ID NUMBER

N

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GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

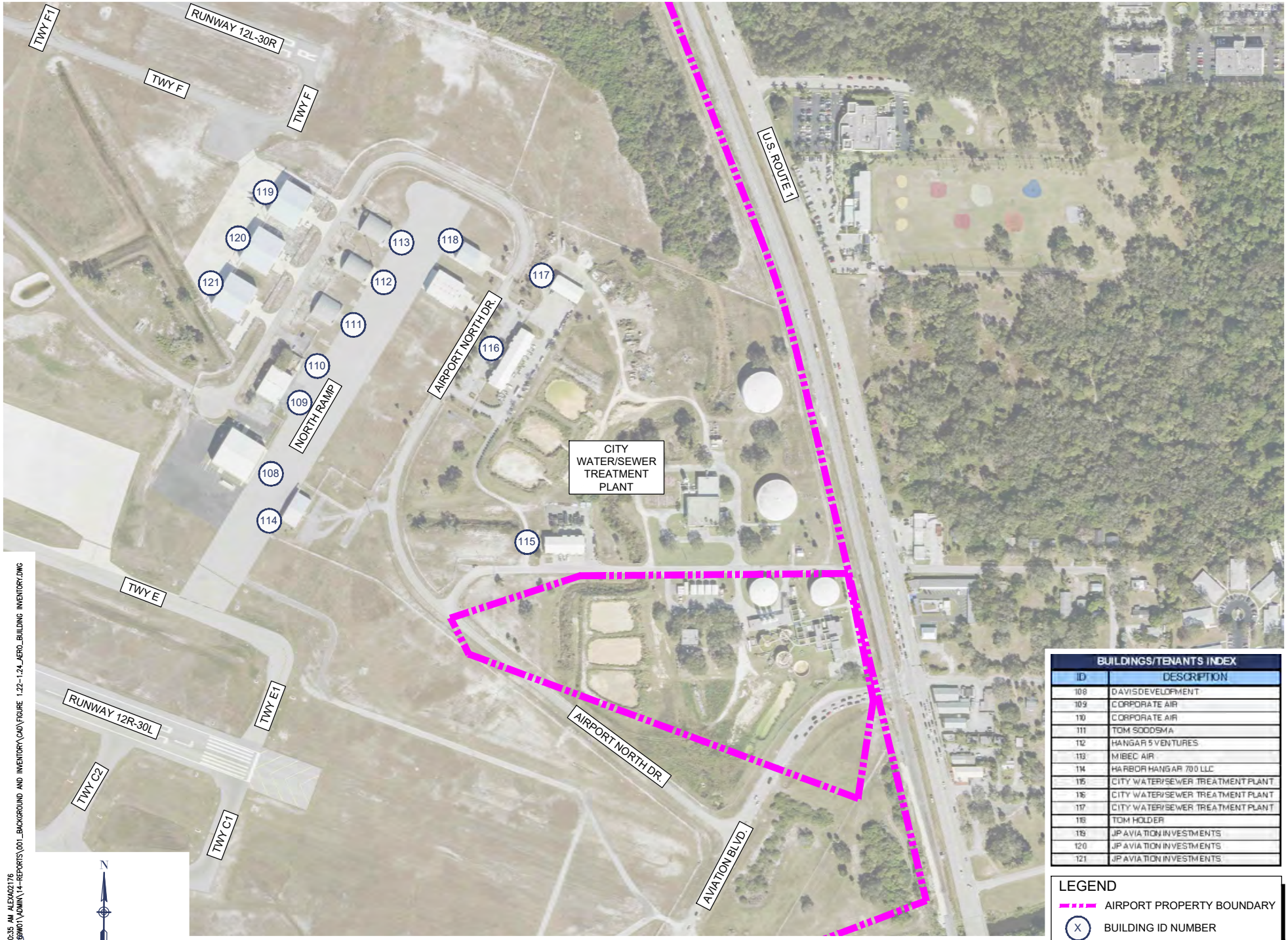
AIRSIDE - WEST

DRAWN BY: JA

CHECKED BY: SZ

FIGURE 1.23

AUG 12, 2024 10:33 AM ALEXA02176
I:\20JOBS\20A0089W01\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.22-1.24_AERO_BUILDING INVENTORY.DWG



BUILDINGS/TENANTS INDEX	
ID	DESCRIPTION
108	DAVIS DEVELOPMENT
109	CORPORATE AIR
110	CORPORATE AIR
111	TOM SOODSMA
112	HANGAR 5 VENTURES
113	MIBEC AIR
114	HARBOR HANGAR 700 LLC
115	CITY WATER/SEWER TREATMENT PLANT
116	CITY WATER/SEWER TREATMENT PLANT
117	CITY WATER/SEWER TREATMENT PLANT
118	TOM HOLDER
119	JP AVIATION INVESTMENTS
120	JP AVIATION INVESTMENTS
121	JP AVIATION INVESTMENTS

LEGEND

AIRPORT PROPERTY BOUNDARY

(X) BUILDING ID NUMBER

N

0 400

GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 10:35 AM ALEXA02176
I:\20JOBS\20A0069W01\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.22-1.24_AERO_BUILDING INVENTORY.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

AIRSIDE - NORTH

DRAWN BY: JA

CHECKED BY: SZ

FIGURE 1.24

Fixed-Base Operators (FBO)

VRB is home to two FBOs that serve transient and based customers: Corporate Air Inc. and Sun Aviation Inc. Although other businesses may offer certain types of FBO services, these two businesses offer the full range of FBO services. Below is additional information about both FBOs.

Corporate Air Inc.

Corporate Air Inc. is a family-owned and -operated FBO established in 1987. Corporate Air is on the west side of the airfield and includes five hangars and an FBO terminal building. As depicted on **Figure 1.25**, the FBO terminal building is approximately 5,000 square feet, with a main lobby and accommodations, including a cafeteria, conference room, pilot lounge, and flight planning room. The FBO offers fueling, including JetA and Avgas; aircraft maintenance; and a charter service. Corporate Air offers more than 67,000 square feet of hangar space that is available for rental to local and itinerant operations. The facility also provides approximately 258,000 square feet of apron space adjacent to the FBO terminal building. Six additional 20,000-square-foot hangars along the newly constructed Taxiway E ramp are anticipated in the near future.

FIGURE 1.25: CORPORATE AIR – FBO TERMINAL BUILDING

West of the FBO terminal building is the future location of a U.S. Customs and Border Protection (CBP) facility. This area is privately funded by Corporate Air and will include apron space and a CBP building. It will provide preclearance for travel from VRB to the Bahamas without stopping at an airport of entry.

Sun Aviation Inc.

Sun Aviation Inc. is a family-owned and -operated FBO established in 1929 and is just east of the airport terminal building. The descendants of Bud Holman, one of the members of the group that built VRB, operate the business[19]. Sun Aviation includes four hangars and an FBO terminal building. As shown on **Figure 1.26**, the FBO terminal building is approximately 6,000 square feet and includes a conference room, pilot and passenger lounges, a coffee lounge, and a snooze room. The FBO offers 24/7 fuel service, which includes JetA and Avgas. Sun Aviation is a FAA-certified Part 145 maintenance and avionics repair facility and is an authorized service center for Piper, Pilatus, and Jetprop aircraft. A Hertz rental car facility is in the Sun Aviation terminal. The facility also provides approximately 220,000 square feet of apron space adjacent to the FBO terminal building.

FIGURE 1.26: SUN AVIATION – FBO TERMINAL BUILDING

[19] https://www.sunaviation.com/history.html, accessed December 27, 2022.

Aircraft Manufacturing

Piper Aircraft Inc. is in the southeast quadrant; however, it is not included as part of the airport property. The 90 acres of land was sold to Piper in 1964 and 1965, with the proceeds used to develop and operate VRB. Piper accesses the airfield through a negotiated agreement with the airport. Piper's facility, shown on **Figure 1.27,** includes five hangars and approximately 200,000 square feet of apron space. Piper has five vehicle parking areas with landside access to the facilities via Piper Drive and Aviation Boulevard.

FIGURE 1.27: PIPER AIRCRAFT INC.

Flight Training

Two flight training companies are tenants on VRB: Paris Air and Skyborne.

Paris Air Inc.

Paris Air is a hands-on flight training facility that is equipped with FAA-approved courses and a Part 145 FAA-approved repair station. As shown on **Figure 1.28**, the facility is approximately 17,000 square feet and offers on-site FAA Airman Knowledge Testing, designated pilot examiners for check rides, and a professional pilot shop. Paris Air has a fleet that consists of helicopters and more than 50 single-engine and multiengine aircraft. Paris Air is on the west side of the airport, adjacent to Runway 4.

Landside access to the facility is via Airport West Drive. An automobile parking area is north of the hangar that includes 31 standard parking spaces. Overflow vehicle parking is along the north edge of the ramp outside of the taxilane object free area (TLOFA).

FIGURE 1.28: PARIS AIR INC.

Skyborne Airline Academy Vero Beach

Skyborne provides a complete flight school training experience. The academy includes ground training facilities, aircraft maintenance, and residential accommodations. One of its facilities is shown on **Figure 1.29**. There are 30 briefing rooms, 50 aircraft, two aviation training devices, and three maintenance hangars. Skyborne is on the north corner of Flight Safety Drive and Cherokee Drive on the south side of the airport. The residential accommodations are on land purchased by the flight school from the airport in 1966.

Landside access is via the intersection of Flight Safety Drive and Cherokee Drive. An automobile parking area is south of the hangar and includes 82 standard parking spaces.

FIGURE 1.29: SKYBORNE AIRLINE ACADEMY

Aircraft Storage

Including the FBOs, there are multiple providers of aircraft storage facilities at VRB, including the city. **Table 1.2** summarizes all the areas. The non-FBO areas are described in the following sections.

Aircraft Storage – City of Vero Beach Hangar Facilities

To the east of the Runway 4 end and Taxiway A is the City of Vero Beach Hangar Facility. These hangars are accessed by taxilanes via Taxiway A. **Figure 1.30** shows the location of the hangar area on the airfield, as well as the type of hangar.

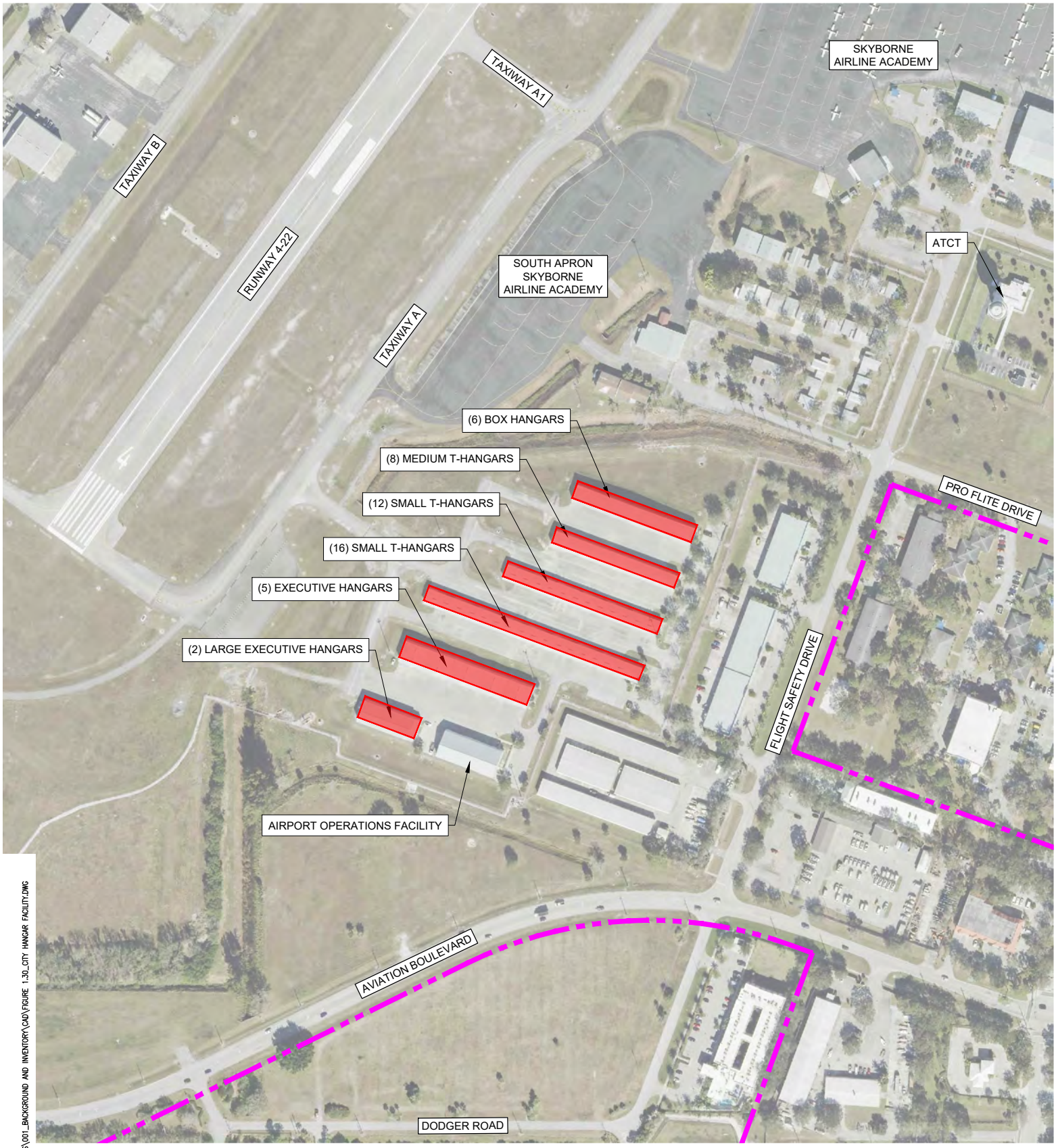
TABLE 1.2: VRB AIRCRAFT STORAGE HANGAR SUMMARY

VRB Hangar Data Summary			
Hangar Tenant/User	**Hangar Type**	**Hangar Area (in Square Feet)**	**Total Square Feet**
West Airfield			
Corporate Air	4 – Corporate Hangars	12,000 16,000 12,000 11,000	51,000
Paris Air	1 – Corporate Hangar	15,000	15,000
Design Home	1 – Corporate Hangar	10,000	10,000
Continental Jet	1 – Corporate Hangar	12,000	12,000
Barnhouse	1 – Corporate Hangar	9,000	9,000
South Airfield			
City of Vero Beach	1 – Large Executive Hangar	3,500	3,500
	4 – Executive Hangars	3,000 each	12,000
	2 – Executive Hangars	2,948 each	5,896
	6 – Box Hangars	1,824 each	10,944
	8 – Medium T-hangars	1,296 each	10,368
	28 – Small T-hangars	1,034 each	28,952
VRB Hangars Inc.	18 – Port-a-Port Hangars	1,500 each	27,000
	2 – Box Hangars	2,500 each	5,000
Sun Aviation	4 – Corporate Hangars	15,000 10,000 16,000 40,000	81,000
Skyborne	3 – Corporate Hangars	8,000 5,000 20,000	33,000
	1 – Shade Hangar	4,000	4,000
North Airfield			
Davis Development	1 – Corporate Hangar	15,000	15,000
Corporate Air	1 – Corporate Hangar	8,000	8,000
	1 – Box Hangar	2,000	2,000
Tom Soodsma	1 – Box Hangar	6,000	6,000
Hangar 5 Ventures	1 – Box Hangar	5,000	5,000
Mibec Air	1 – Box Hangar	5,000	5,000
Harbor Hangar 700 LLC	1 – Corporate Hangar	6,000	6,000
Tom Holder	1 – Corporate Hangar	4,000	4,000
JP Aviation Investments	3 – Corporate Hangar	12,000 each	36,000

Notes: 1. One shade hangar included in Port-A-Port total square footage.

2. Total hangar square footage is rounded up to the nearest 1,000 square foot.

Source: City of Vero Beach Hangar Sizes, T-Hangar Layout Map | Vero Beach Airport, accessed January 2023; Hangar Sizes, Google Earth, accessed January 2023.



LEGEND

AIRPORT PROPERTY BOUNDARY

CITY OF VERO BEACH HANGAR FACILITY

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GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

VERO BEACH | HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	CITY OF VERO BEACH HANGAR FACILITY	DRAWN BY: JA CHECKED BY: SZ	FIGURE 1.30

AUG 12, 2024 11:16 AM ALEXA02176
I:\20\065\20A0069W01\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.30_CITY HANGAR FACILITY.DWG

Executive Hangars

There are two types of executive hangars at VRB: executive and large executive. There are five executive hangars and two large executive hangars. Each executive hangar is 60 feet wide by 60 feet long, for a total of 3,600 square feet each. The hangars have a door height of 18 feet that opens to the southwest. The large executive hangars are 70 feet wide by 50 feet long, for a total of 3,500 square feet each. Both large executive hangars have 18-foot doors that open to the northeast. **Figure 1.31** shows two executive hangars.

FIGURE 1.31: CITY-OWNED EXECUTIVE HANGARS 6 AND 7

Box Hangars

There are six box hangars measuring 48 feet wide by 39 feet long, for a total of 1,872 square feet. Each box hangar has a 14-foot-tall access door that opens to the southwest. **Figure 1.32** shows the box hangars on the left and two sets of T-hangars on the right.

FIGURE 1.32: CITY-OWNED BOX AND T-HANGARS

T-Hangars

There are two differently sized T-hangars within the hangar facility area: medium T-hangars and small T-hangars. There are eight medium T-hangars that are 48 feet wide by 34 feet long. Each medium T-hangar has an access door that has a height of 14 feet and faces northeast or southwest. There are two storage areas on each end of the T-hangars that are approximately 18 feet wide by 12 feet long with 8-foot-tall access doors. There are two rows of small T-hangars, for a total of 28 T-hangars. Each small T-hangar is 49 feet wide by 32 feet long and has a 12-foot-tall access door that faces in a northeast-southwest orientation. There are three storage areas that are

17 feet wide by 11 feet long with 7-foot-tall access doors. The is also a meeting room available on the east side of the T-hangars.

Aircraft Storage – VRB Hangars Inc.

The city leases land to VRB Hangars Inc. for an area of Port-A-Port hangars, shown on **Figure 1.33**. Port-A-Port hangars were designed to be mobile. An aircraft owner could lease ground on an airport, purchase and place a Port-A-Port hangar on the property and then move the hangar in the future, if desired. More commonly, the Port-A-Port hangar owner would sell the hangar to another aircraft owner rather than move it. The Port-A-Port hangar area is north of the standard T-hangars and has 18 Port-A-Port units and two box hangars.

FIGURE 1.33: VRB PORT-A-PORT HANGAR AREA

Aircraft Storage – West Ramp

The west apron area is on the west side of Runway 4/22. There are six large hangars along the west apron. These hangars serve Barnhouse, Continental Jet, Corporate Air, Design Home, and Paris Air. Several of the hangars also have fuel service. Corporate Air has two hangars along its apron. There is approximately 100,000 square feet of hangar on the west side of VRB. **Figure 1.34** is a view of the West Ramp looking north.

FIGURE 1.34: WEST RAMP LOOKING NORTH

Aircraft Storage – North Ramp

North of Runway 12R/30L is an area of 11 large hangars totaling almost 90,000 square feet. The ramp for this area was developed on the alignment of one of the old NAS runways. Airport North Drive off Aviation Boulevard provides access to this aera. The apron along Taxiway E provides the opportunity to construct additional hangars in the north airfield. Some of the hangar sites are height-limited by the ATCT line of sight to Runway 12L/30R. There are also stormwater detention facilities in the north ramp area, constructed to support the development of the Taxiway E apron and hangars. **Figure 1.35** shows the north airfield hangar area.

FIGURE 1.35: NORTH RAMP AREA

1.18. Commercial Service Facilities

Terminal Building

The terminal building is two stories and approximately 24,000 square feet and was constructed in 2009. As shown on **Figure 1.36,** the west side of the building houses the commercial airline services and airport administrative offices. The commercial airline service functions and an Avis rental car counter are on the first floor, and the airport administrative offices, a conference room, restrooms, and aircraft sales company Flightline are on the second floor.

FIGURE 1.36: TERMINAL BUILDING

The terminal building accommodates commercial service flights. To support commercial service, as shown on **Figure 1.37**, the terminal building includes a Transportation Security Administration screening area for passengers and luggage on the first floor. After screening, there is a lobby on the north side of the building. Passengers exit the west side of the terminal building to proceed to the commercial service hardstand apron to board the aircraft. The concrete apron was completed in 2021 and is north of the short-term automobile parking area. The apron was constructed with concrete and is approximately 83,000 square feet, as depicted on **Figure 1.38**.

The first floor of the east side of the building houses C.J. Cannon's restaurant and lounge. The restaurant overlooks the airfield. **Figure 1.39** shows the landside entrance to C.J. Cannon's.

FIGURE 1.37: SCREENING AREA

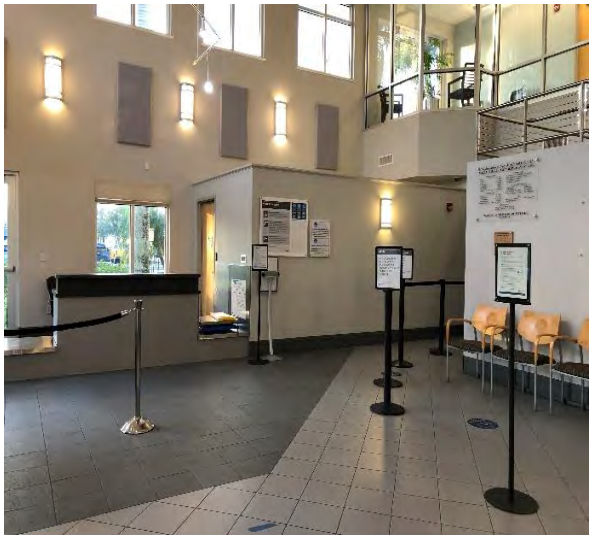


FIGURE 1.38: COMMERCIAL SERVICE HARDSTAND APRON

FIGURE 1.39: ENTRANCE TO C.J. CANNON'S

1.19. Ground Access, Parking, and Utilities

Ground Access

U.S. Route 1 and 43rd Avenue border VRB on the east and west side of the airfield. These roads are owned and controlled by others, including the state, city and county. Aviation Boulevard runs along the southern portion of the airport. Some portions of Aviation Boulevard are on airport property, and other portions are on city property. U.S. 1 is an urban principal arterial, while Airport Boulevard and 43rd Avenue are urban minor arterials. FDOT has an ongoing planning and development project to consider improvements to U.S. 1 at its intersection with Aviation Boulevard. There are also plans to extend Aviation Boulevard to the east to tie into the hospital. VRB is coordinating with the proponents of these proposed projects so there are no adverse impacts to the airport or its FAA grant assurances.

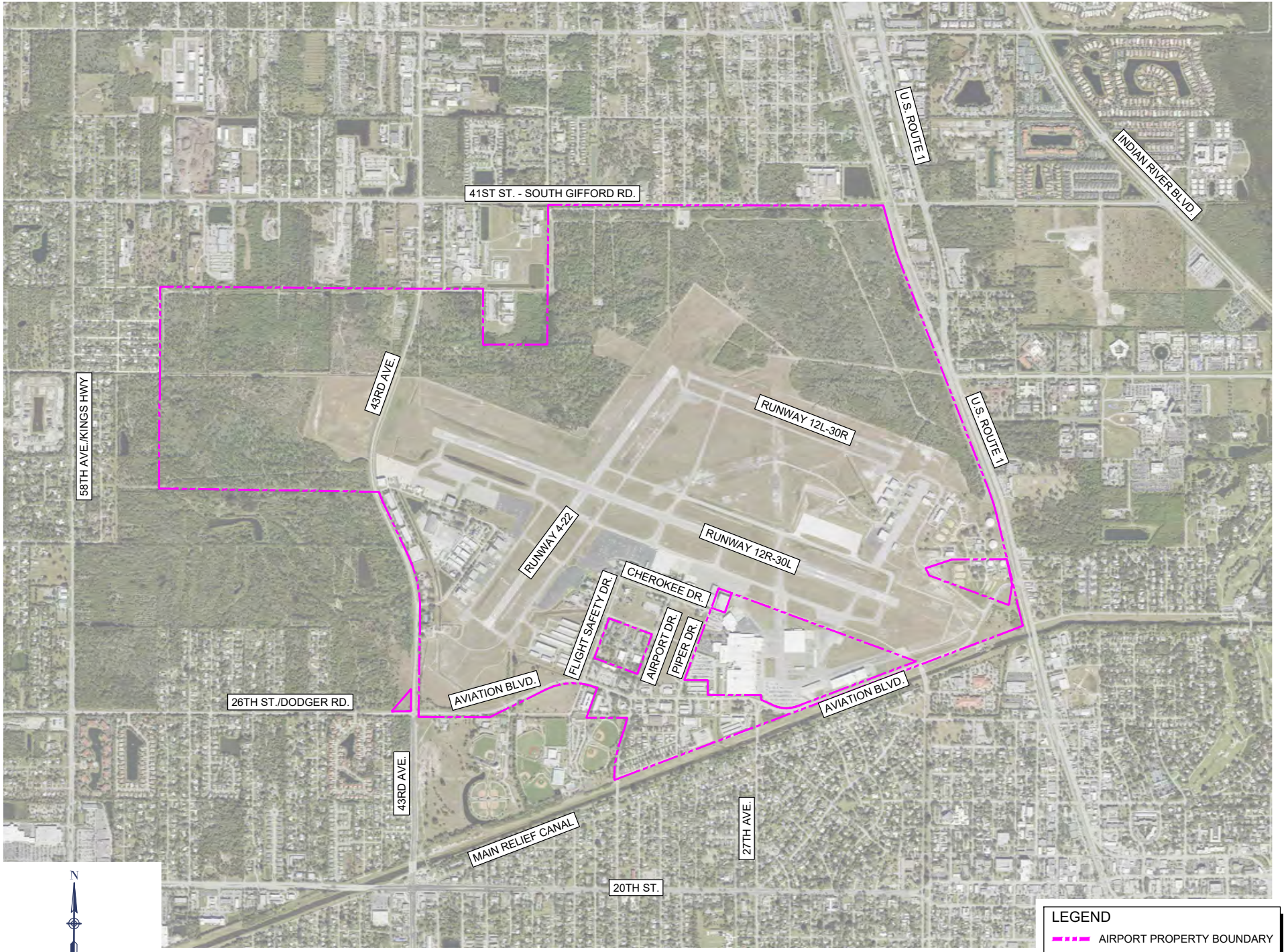
Access to the terminal is provided by Airport Drive, Flight Safety Drive, or Piper Drive from Aviation Boulevard. Airport West Drive provides access to the west airfield area. Airport North Drive provides access to the north ramp. 41st Avenue is north of VRB and is not used for public access to the airport. The Main Relief Canal is south of VRB. **Figure 1.40** depicts the surrounding roadways.

Terminal Parking Areas

Short- and long-term automobile parking serves the terminal at VRB, as depicted on **Figure 1.41**. The short-term parking area is north of Cherokee Drive, adjacent to the terminal building, and includes 84 standard parking spaces, 13 compact parking spaces, and four accessible parking spaces.

Additional short-term parking adjacent to C.J. Cannon's offers vehicle parking and that includes six standard parking spaces and four accessible parking spaces.

The long-term parking areas are south of Cherokee Drive, across from the terminal building. There are two long-term parking areas labeled Long-Term Parking Lot A and Long-Term Parking Lot B. Lot A is at the southwest corner of Cherokee Drive and Airport Drive and includes 51 standard parking spaces. Lot B is directly south of Lot A and includes 82 standard parking spaces. The airport is studying the potential need to expand the parking to support the Breeze service. Other businesses at VRB and Piper Aircraft have their own designated parking areas.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

LEGEND

AIRPORT PROPERTY BOUNDARY

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GRAPHIC SCALE IN FEET

AUG 12, 2024 11:26 AM ALEXA02176
I:\20L08S\20A06S\WO1\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.40_ROADWAYS SURROUNDING VRB.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

ROADWAYS SURROUNDING VRB

DRAWN BY:	JA	FIGURE 1.40
CHECKED BY:	SZ	

Source: Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 11:30 AM ALEXA02176
I:\20J08S\20A06BW01\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.41_TERMINAL PARKING AREAS.DWG

VERO BEACH REGIONAL AIRPORT | HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	TERMINAL PARKING AREAS	DRAWN BY: JA CHECKED BY: SZ	FIGURE 1.41

Utilities

When VRB was operated as a NAS in the 1940s, many of the utilities were constructed to support the needed infrastructure. Many of the current utility systems date to the Navy days, while others have been replaced. Utility data is being collected as part of this master plan, so any needed upgrades or expansions can be considered. Coordination calls with the Vero Beach Public Works Department were conducted to collect the location and age of the utilities. **Figure 1.42** depicts the known utilities on and around VRB.

Electric

On December 17, 2018, Florida Power and Light (FPL) began serving Vero Beach, taking over the electric service from the city. FPL is the largest power utility in Florida. There are above-ground power lines along the north and west airport property line in a 50-foot easement. There are also two electric substations on VRB. One is along 41st Street on the north side of VRB. The other is south of Aviation Boulevard.

Water and Sewer

Water and sewer service is provided by the City of Vero Beach. Most of the City's water wells are on VRB, as shown on **Figure 1.43**. The water treatment plant is also on VRB. A new sanitary treatment plant will be built on VRB. No development is allowed within 100 feet of the water wells. Other types of development are limited within 500 feet of the water wells to avoid potential contamination. The northeastern part of VRB is part of the recharge area for Vero Beach, as shown on **Figure 1.44.**

Stormwater

The availability of stormwater data is limited, because much of the system dates to the 1940s. As development has occurred on the airport, stormwater detention has been added. A stormwater master plan is being prepared concurrently with the airport master plan. As data is available from the stormwater master plan, it will be incorporated into the airport master plan for consideration during the alternatives analysis evaluation.

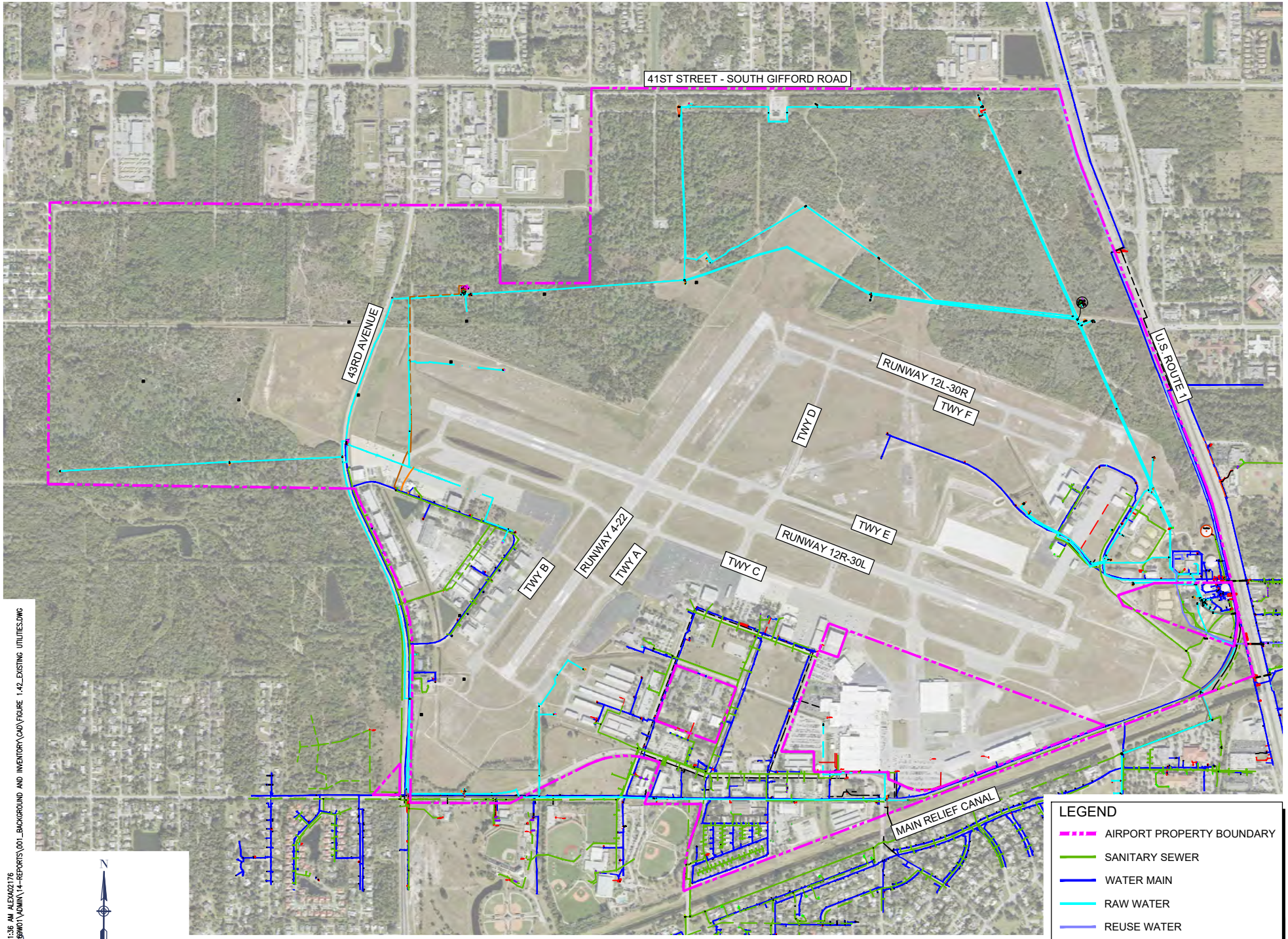
Natural Gas

Based on as-built construction documents dated February 2021, a new 6-inch gas main was installed along the northern edge of Aviation Boulevard. This new main tied into a 4-inch gas main at the northeast intersection of Aviation Boulevard and 43rd Avenue. Moving to the east, the new main tied into another 6-inch gas main on the west side of Piper Drive. The new main was located with consideration to the ultimate widening of Aviation Boulevard.

As-builts from March 2021 depict four additional sites that include the installation of 2-inch gas mains on the east sides of Flight Safety Drive and Airport Drive at the intersection of Aviation Boulevard.

Fiber

Most of the fiber infrastructure around the airport is owned by AT&T. There is fiber to the two electrical substations on the airport.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023; Existing Utilities, City of Vero Beach, 2023.

AUG 12, 2024 11:36 AM ALEXA02176
I:\20JOBS\20A0089W01\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.42_EXISTING UTILITIES.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	EXISTING UTILITIES

DRAWN BY:	JA	FIGURE 1.42
CHECKED BY:	SZ	

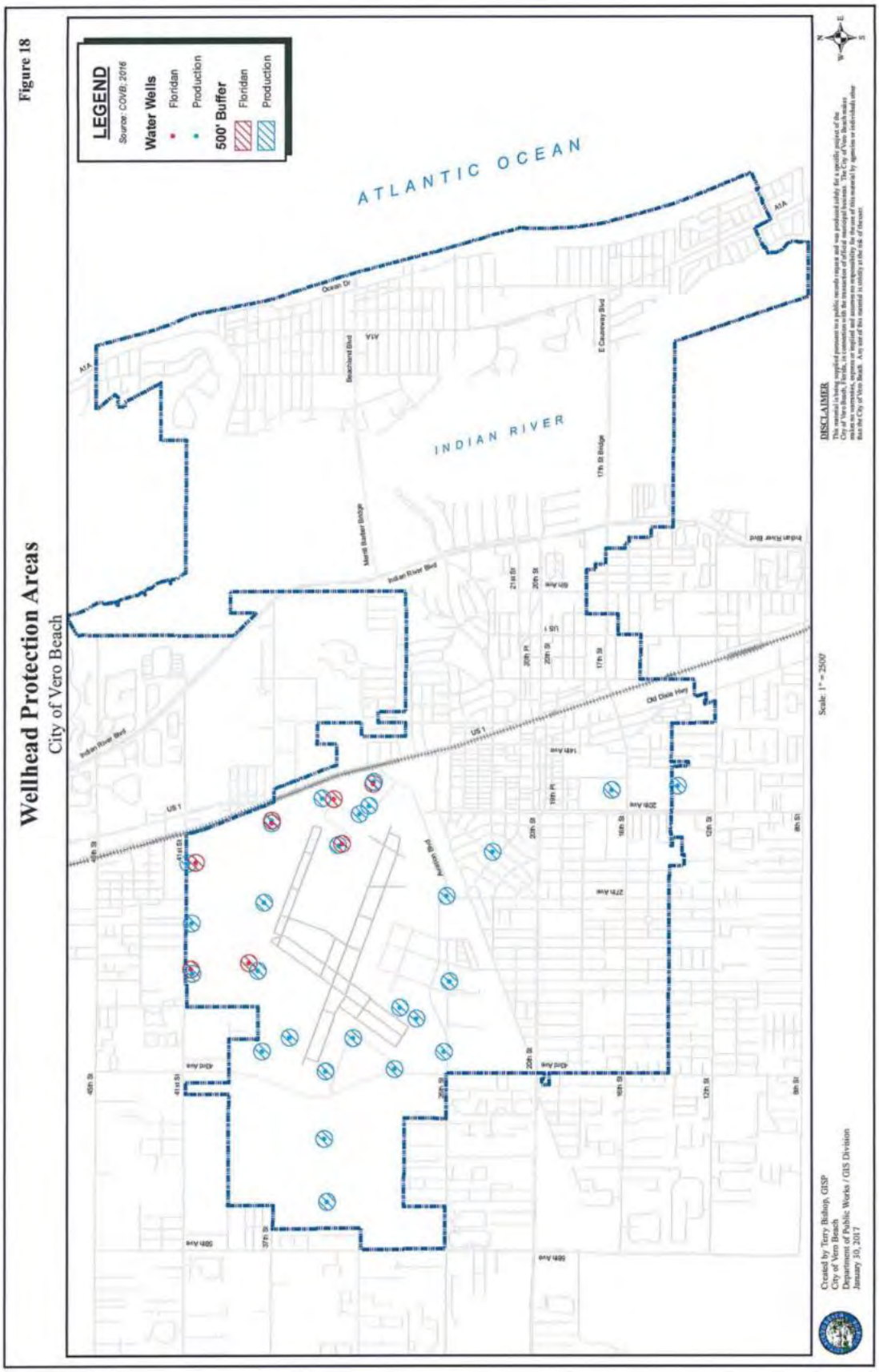


FIGURE 1.43: WATER WELL PROTECTION AREAS ON VRB

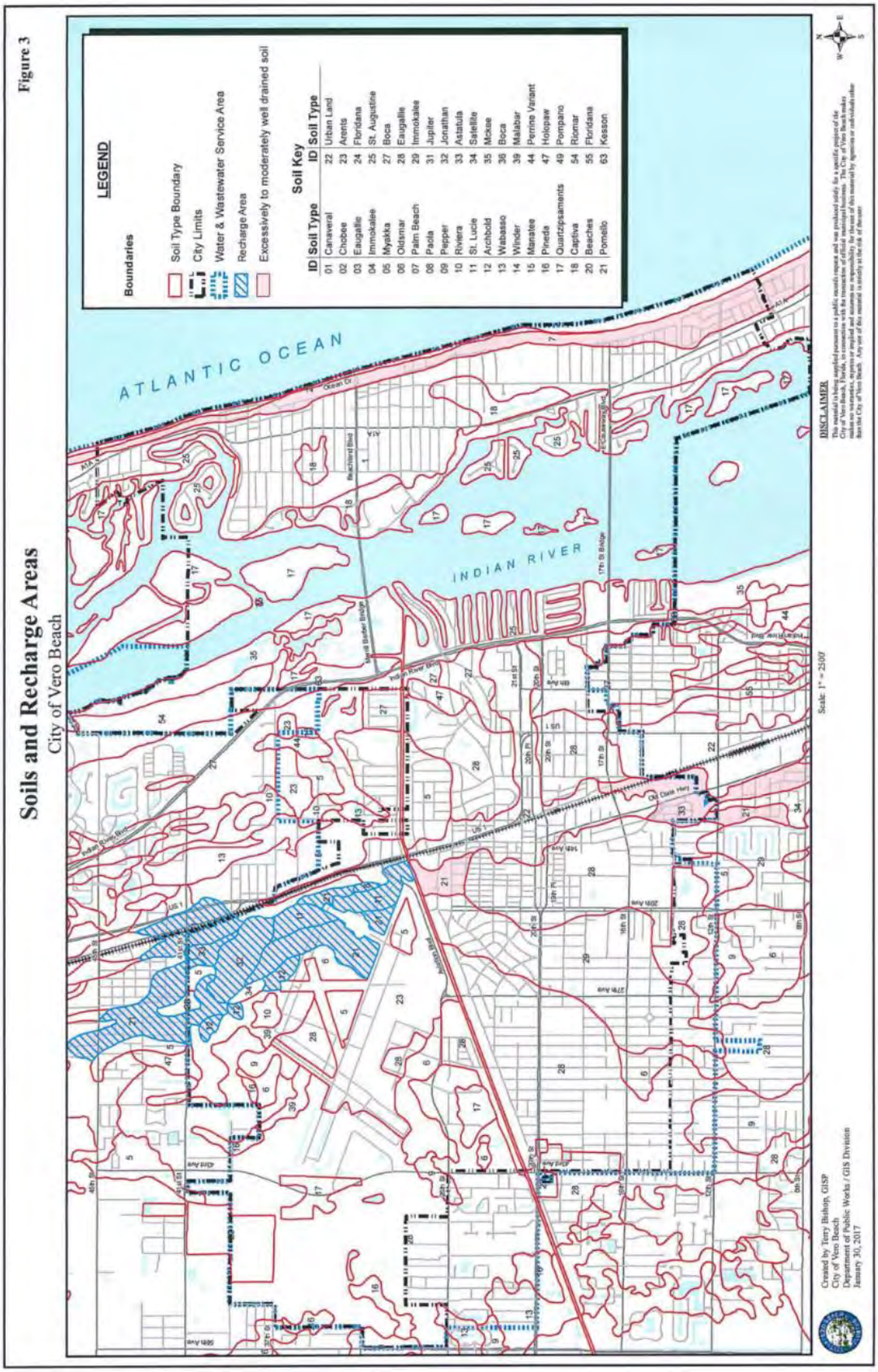


FIGURE 1.44: SOILS AND RECHARGE AREAS

1.20. South Nonaeronautical Facilities

Because the City of Vero Beach was deeded a large parcel of land by the U.S. government after the closure of the NAS, there was sufficient land to provide an airport as well as additional land to develop a revenue stream to support the airport. Thus, there are areas of nonaeronautical development on the airport. These areas are primarily on the south and west sides of the airport. **Figure 1.47** depicts the south nonaeronautical development.

South Airport

The south nonaeronautical development comprises two primary areas. The first area is north of Aviation Boulevard. **Figure 1.45** is an example of nonaeronautical development in this area. The Skyborne Airline Academy residential accommodations for students are in this area but off airport property. The other businesses in this area include:

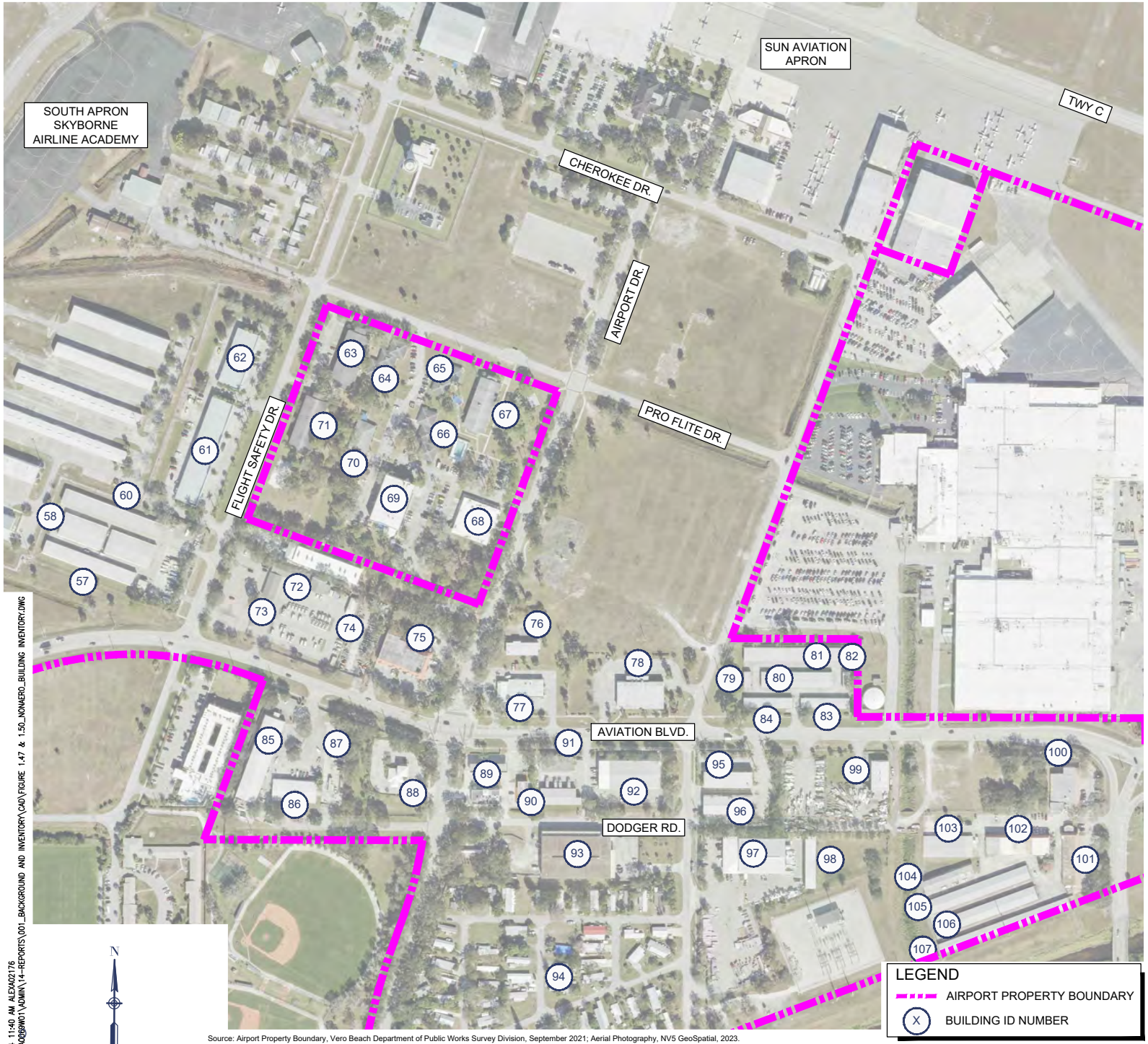
- Aero Treasure Coast Storage
- AT&T
- Florida Pilot Center
- Fox Marine
- Indian River Distillery
- La Bella Casa Salon
- Olivia's (café)
- Rosner Motorsports
- Storage Me Aero
- Summit Construction Management
- Technology Partners

FIGURE 1.45: SOUTH AIRPORT NONAERONAUTICAL DEVELOPMENT

South of Aviation Boulevard are additional businesses, including (some of these are within the Vero Airport Trade Center):

- Backbeat Music Parlor
- Beacon Building Products
- Binafif Aluminum
- Catelli Cigar Lounge
- Complete Marine Services
- Dragonfly Boatworks
- Edificium Construction
- Exxon/Mobil
- Ferrellgas
- iTHINK Financial
- J&B Aluminum Construction
- Loyalty Barber Spot
- Martell Physical Therapy Corp.
- Nettie's Roadside Restaurant
- Unicorn Epoxy
- Vero Airport Trade Center (30-plus businesses; see **Figure 1.46**)
- Walking Tree Brewery

FIGURE 1.46: VERO AIRPORT TRADE CENTER



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

BUILDINGS/TENANTS INDEX

ID	DESCRIPTION
57	STORAGE ME AERO
58	STORAGE ME AERO
60	STORAGE ME AERO
61*	ROSNER MOTORSPORTS
62*	SUMMIT CONSTRUCTION
63**	SKYBORNE AIRLINE ACADEMY
64**	SKYBORNE AIRLINE ACADEMY
65**	SKYBORNE AIRLINE ACADEMY
66**	SKYBORNE AIRLINE ACADEMY
67**	SKYBORNE AIRLINE ACADEMY
68**	SKYBORNE AIRLINE ACADEMY
69**	SKYBORNE AIRLINE ACADEMY
70**	SKYBORNE AIRLINE ACADEMY
71**	SKYBORNE AIRLINE ACADEMY
72	AT&T
73	AT&T
74	AT&T
75*	OLIVIA'S JESUS EL REY DE GLORIA LA BELLA CASA SALON TECHNOLOGY PARTNERS
76	PROPERTY LIFE
77	INDIAN RIVER DISTILLERY THREE BITE TACOS
78	VACANT
79	AERO TREASURE COAST STORAGE
80	AERO TREASURE COAST STORAGE
81	AERO TREASURE COAST STORAGE
82	AERO TREASURE COAST STORAGE
83	AERO TREASURE COAST STORAGE
84	AERO TREASURE COAST STORAGE
85	DRAGONFLY BOATWORKS
86	DRAGONFLY BOATWORKS
87	DRAGONFLY BOATWORKS
88	iTHINK FINANCIAL
89	EXXON MOBIL
90	ZION OPTO, INC.
91	ZION OPTO, INC.
92	ZION OPTO, INC.
93	WALKING TREE BREWERY
94	MOBILE HOME PARK
95	CATELLI CIGAR LOUNGE BACKBEAT MUSIC PARLOR
96	RIDGELINE ROOFING
97	BEACON BUILDING PRODUCTS
98	DRAINAGE EASEMENT FOR FP&L
99	COMPLETE MARINE SERVICES
100	VERO AIRPORT TRADE CENTER
101	VERO AIRPORT TRADE CENTER
102	VERO AIRPORT TRADE CENTER
103	VERO AIRPORT TRADE CENTER
104	VERO AIRPORT TRADE CENTER
105	VERO AIRPORT TRADE CENTER
106	VERO AIRPORT TRADE CENTER
107	VERO AIRPORT TRADE CENTER

* BUILDING ON LAND LEASE WITH AIRPORT
** NOT AIRPORT TENANT

LEGEND
AIRPORT PROPERTY BOUNDARY
(X) BUILDING ID NUMBER

AUG 12, 2024 11:40 AM ALEXA02176
I:\20J08S\20A06BW01\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.47 & 1.50_NONAERO_BUILDING INVENTORY.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT
MASTER PLAN

SOUTH AIRPORT
NONAERONAUTICAL FACILITIES

DRAWN BY: JA
CHECKED BY: SZ

FIGURE
1.47

The local entertainment businesses including Walking Tree Brewery, Backbeat Music Parlor, and Catelli Cigar Lounge, are referred to as an entertainment district. Below are highlights of several diverse businesses in the south nonaeronautical area, including the entertainment district.

Backbeat Music Parlor

Backbeat Music Parlor is adjacent to Catelli Cigar Lounge on the southeast corner of Aviation Boulevard and Piper Drive. Known as Vero Beach's premier music spot, the Backbeat Music Parlor has parking on the north and east sides of the building. The parlor attracts many local musicians from the Treasure Coast area and brings music and entertainment to Vero Beach.

Catelli Cigar Lounge

Catelli Cigar Lounge is adjacent to the Backbeat Music Parlor and is on the southeast corner of Aviation Boulevard and Piper Drive. Parking for the lounge is on the north and east sides of the building. Catelli Cigar Lounge offers premium cigars and a variety of wines and craft beers.

Rosner Motorsports Inc.

Rosner Motorsports Inc. is a preowned luxury, exotic, and vintage car dealer. The facility is approximately 18,000 square feet and includes a climate-controlled showroom and state-of-the-art service center, where any model automobile can be serviced. Rosner Motorsports buys, sells, and trades vehicles and offers auto loans or lease options.

Summit Construction Management Inc.

Summit Construction Management Inc. is in the northern strip building and started in 1999. It primarily works in Indian River and St. Lucie counties, which supports the surrounding community. It provides design, construction management, and general contracting services on a variety of projects, including residential, commercial, municipal, and educational. The Summit Construction Management Inc. team offers in-house project managers, general superintendents, business managers, and architects.

Walking Tree Brewery

Walking Tree Brewery began in 2016 and is south of Dodger Road between Airport Drive and Piper Drive. As shown on **Figure 1.48**, the brewery operates in a building that is approximately 24,000 square feet and was built in 1945. The building has been renovated since its early days as a naval warehouse. Parking is on the east side of the building and includes 19 standard, four compact and two accessible spaces. The brewery provides several award-winning craft beer options and hosts events, including concerts, weddings, receptions, corporate functions, and charity events.

FIGURE 1.48: WALKING TREE BREWERY

Citrus Park Village, a mobile home community that has been in place for more than 50 years, is south of Aviation Boulevard. It is within the airport property line, as depicted on the ALP. Under an agreement with the FAA, the airport property line should be modified to move Citrus Park Village outside the airport property line. The airport has maintained Citrus Park Village and will continue to do so.

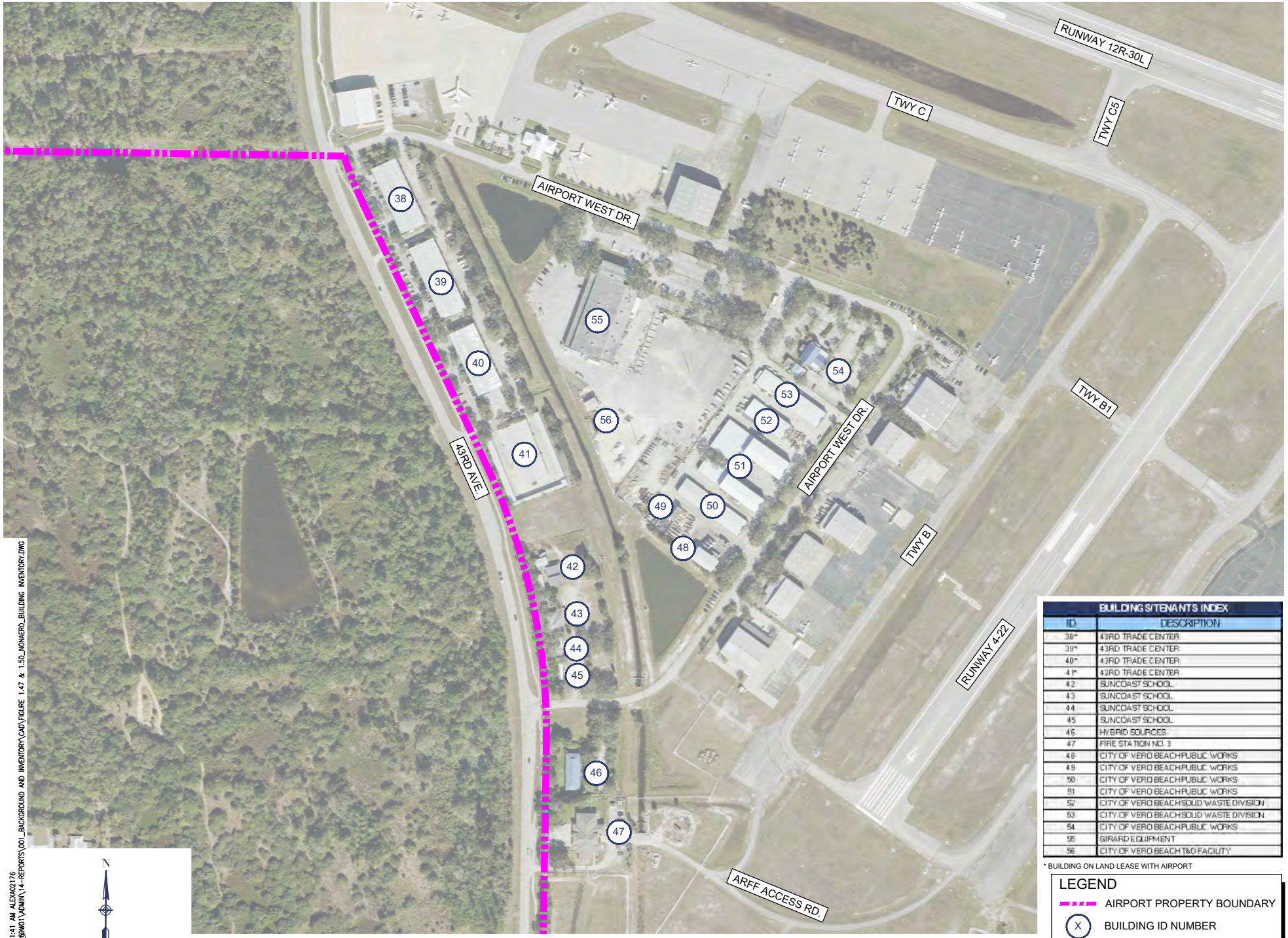
West Industrial Area

The west industrial area is along 43rd Avenue and Airport West Drive, as shown on **Figure 1.50**. An example of the development is shown on **Figure 1.49**. A large portion of this area is occupied by City of Vero Beach Public Works and Engineering Facility. Other business in this area include:

- 43rd Avenue Mini-Storage
- Ace Marine Diesel
- Comfort Zone A/C and Heating
- DLC Flooring
- Double AA Performance
- E-Smartbuyer
- Florida Country Tile
- Florida Heart CPR
- Girard Equipment
- Hybrid Sources
- Image360 Vero Beach
- My Florida Roofing Contractor
- Paris Air
- Reilly Construction and Development
- Sherwin-Williams
- SunCoast School
- Teamsters Local 769
- To Every Nation Thrift Store
- Treasure Coast Coffee Traders

FIGURE 1.49: WEST AIRPORT NONAERONAUTICAL DEVELOPMENT

Fire Station 3 is also along 43rd Avenue. This station provides fire and rescue services for VRB, as discussed in Section 1.22.



BUILDINGS/TENANTS INDEX	
ID	DESCRIPTION
38*	43RD TRADE CENTER
39*	43RD TRADE CENTER
40*	43RD TRADE CENTER
41*	43RD TRADE CENTER
42	SUNCOAST SCHOOL
43	SUNCOAST SCHOOL
44	SUNCOAST SCHOOL
45	SUNCOAST SCHOOL
46	HYBRID SOURCES
47	FIRE STATION NO. 3
48	CITY OF VERO BEACH PUBLIC WORKS
49	CITY OF VERO BEACH PUBLIC WORKS
50	CITY OF VERO BEACH PUBLIC WORKS
51	CITY OF VERO BEACH PUBLIC WORKS
52	CITY OF VERO BEACH SOLID WASTE DIVISION
53	CITY OF VERO BEACH SOLID WASTE DIVISION
54	CITY OF VERO BEACH PUBLIC WORKS
55	GIRARD EQUIPMENT
56	CITY OF VERO BEACH T&D FACILITY

* BUILDING ON LAND LEASE WITH AIRPORT

LEGEND

AIRPORT PROPERTY BOUNDARY

(X) BUILDING ID NUMBER

N

0 400

GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 11:41 AM ALEXA02176
I:\20JOBS\20A0089W01\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.47 & 1.50_NONAERO_BUILDING INVENTORY.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT
MASTER PLAN

WEST AIRPORT
NONAERONAUTICAL FACILITIES

DRAWN BY: JA
CHECKED BY: SZ

FIGURE
1.50

1.21. City of Vero Beach Facilities

Figure 1.50 includes facilities operated under the City of Vero Beach. Below is a description of each facility.

City of Vero Beach Public Works and Engineering Facility

The City of Vero Beach Public Works and Engineering Facility is on the west side of the airport. As depicted in **Figure 1.51**, the building is approximately 5,000 square feet and is located off Airport West Drive. Parking is available around the facility that includes 143 standard spaces and three accessible spaces. The facility provides civil engineering, surveying, and geographic information system services to other public works departments and the City of Vero Beach. The facility also issues permits and provides construction inspections in the city's right-of-way, among other services and responsibilities.

FIGURE 1.51: CITY OF VERO BEACH PUBLIC WORKS AND ENGINEERING FACILITY

City of Vero Beach Solid Waste Division

The City of Vero Beach Solid Waste Division is located off Airport West Drive on the west side of VRB. The facility is approximately 3,500 square feet. Behind the building, there is approximately 20,000 square feet of workspace available for work trucks and garbage/recycling storage equipment. The facility provides storage and maintenance services for the vehicles. No disposal of solid waste occurs at the facility.

1.22. Other Airport Facilities and Equipment

Aircraft Rescue and Firefighting

Per FAA regulations, operators of Part 139 airports must provide ARFF services during air carrier operations. Fire Station 3 operates as the ARFF facility at VRB. As shown on **Figure 1.52**, the ARFF station is in the southeast quadrant of the airfield, off the Runway 4 end. Landside access is from Airport W Drive via 43rd Avenue. The station is approximately 12,000 square feet with two bays and is equipped with a 1993 Oshkosh T-1500 with 1,500 gallons of water/aqueous film forming foam (AFFF) and a 2010 Rosenbauer Airwolf with 750 gallons of water/AFFF. Both ARFF vehicles are equipped with 500 pounds of dry chemical capacity. VRB also has a supplemental ARFF vehicle, a 2007 Crash Rescue CAV 5300 with 300 gallons of water/AFFF and 500 pounds of dry chemical. The ARFF vehicles also carry other firefighting equipment. An access road is provided from the station to the airfield to meet the FAA's requirement of three minutes from the station to the midpoint of the farthest runway (Runway 12R/30L) serving air carrier aircraft.

FIGURE 1.52: ARFF STATION (FIRE STATION 3)

The FAA has five possible ARFF indexes considering the maximum length of aircraft operating at the airport and average daily departures, known as the ARFF Index. The indexes range from ARFF Index A through ARFF Index E. VRB is classified with an ARFF Index B. **Table 1.3** below summarizes the ARFF Index requirements.

TABLE 1.3: ARFF INDEX REQUIREMENTS

ARFF Index Requirements		
ARFF Index	Maximum Aircraft Length	Minimum Number of ARFF Vehicles Required
A	< 90 feet	1 Class 1 (100 gal of water/AFFF and 500 pounds of dry chemical or equivalent)
B	< 90 feet but less than 126 feet	1 Class 1/1 Class 4 1,500 gal of water/AFFF; if Class 4 has dry chemical, Class 1 not needed)
C	< 126 feet but less than 159 feet	1 Class 1 and 2 Class 4
D	< 159 feet but less than 200 feet	1 Class 1, 1 Class 4 and 1 Class 5 (3,000-4,500 gallon water/AFFF)
E	At least 200 feet	1 Class 1 and 2 Class 5

Class 2 (300 gallon water/AFFF and dry chemical) or Class 3 (500 gallon water/AFFF and dry chemical) can be substituted for a Class 1.

Source: Electronic Code of Federal Regulations (eCFR) Title 14, Chapter I, Subchapter G, Part 139, Subpart D, Subsection 139.315, eCFR: 14 CFR 139.315 -- Aircraft rescue and firefighting: Index determination., accessed October 2022.

FAA Advisory Circular 150/5220-10E: Guide for Specification of Aircraft Rescue and Fire Fighting (ARFF) Vehicles, June 1, 2011.

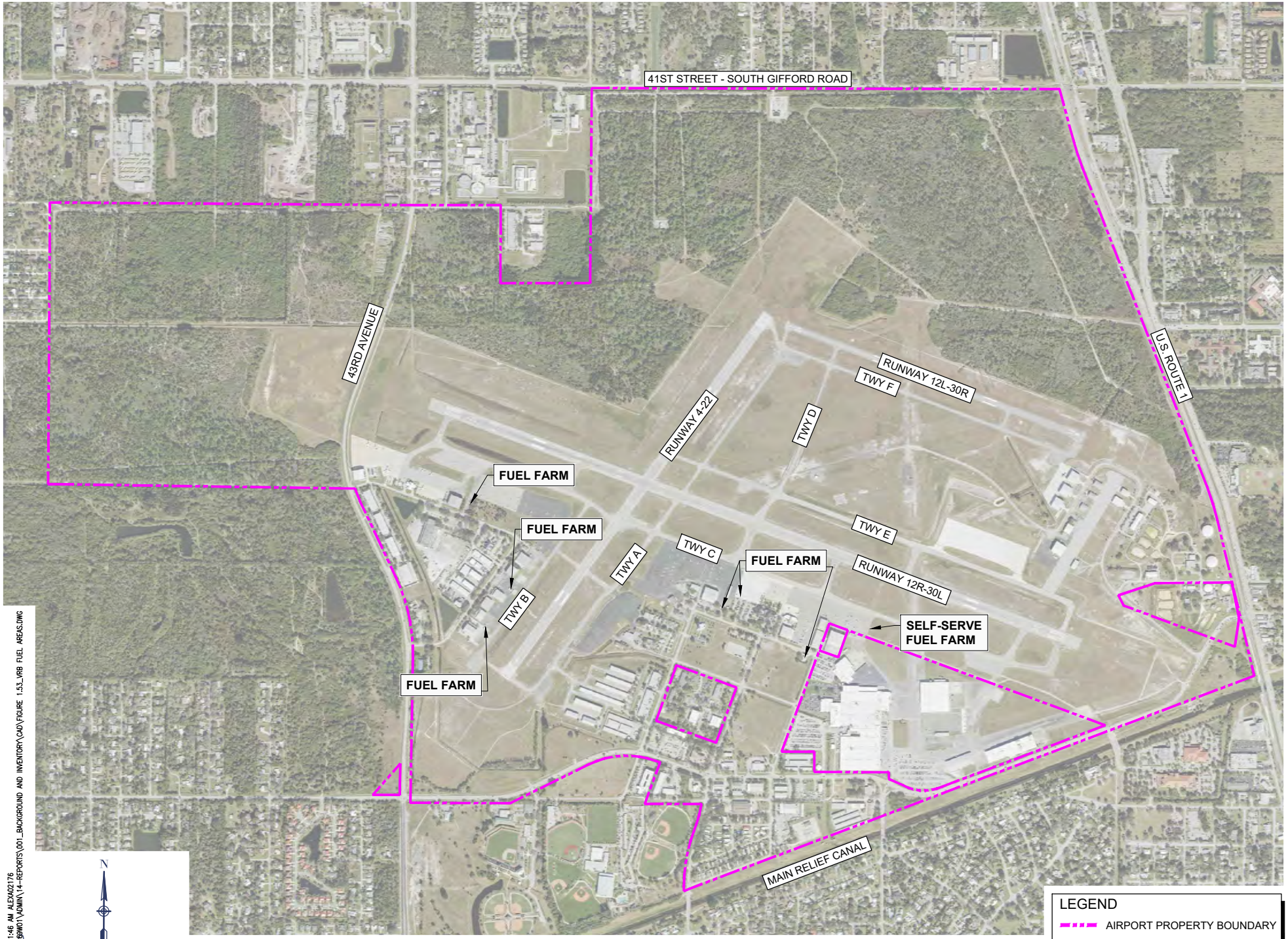
Fuel Areas

Figure 1.53 depicts the locations of the fuel farms at VRB. **Table 1.4** summarizes the type of fuel and fuel tank capacities for each location.

TABLE 1.4: SUMMARY OF FUEL AREAS

Summary of Fuel Areas		
Location (FBO)	Fuel Type Available	Fuel Capacity
Continental Jet	Jet A	5,000 gal
Corporate Air	Jet A 100 LL	2–20,000 gal 12,000 gal (reducing to 8,000 gal)
Paris Air	100 LL	5,000 gal self-serve
Skyborne	100 LL Autogas (refuel ground vehicles) Diesel (refuel ground vehicles)	2–12,000 gal 500 gal 500 gal
Sun Aviation	Jet A 100 LL	40,000 gal 20,000 gal

Source: Airport tenant interviews collected November 17, 2022, and follow-up calls.



Source: Aerial Photography, NV5 GeoSpatial, 2023.

LEGEND

AIRPORT PROPERTY BOUNDARY

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AUG 12, 2024 11:46 AM ALEXA02176
I:\20J08S\20A08S\WO1\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.53_VRB FUEL AREAS.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

VRB FUEL AREAS

DRAWN BY:	JA	FIGURE 1.53
CHECKED BY:	SZ	

Airport Operations Facility

The airport operations facility, as shown on **Figure 1.54**, is in the City of Vero Beach hangar facility area. The building is approximately 8,000 square feet and is accessed via a security gate south of the west industrial area off Flight Safety Drive. Automobile parking is on the east side of the building and includes 10 standard spaces.

FIGURE 1.54: AIRPORT OPERATIONS FACILITY

Security and Fencing

VRB has an access control/badging system in place, and the Vero Beach Police Department provides 24-hour patrols. The airfield is surrounded by 8.5-foot, chain-link fence with barbed wire on top. The airport has 53 gates around the perimeter with access control including card readers, plus the Piper access. Additional security fencing is on the north and west sides of the terminal building for access to the commercial service apron.

Perimeter Road

VRB has some sections of perimeter road within the airport fence. There is a section off the end of Runway 30L that provides access between the north and south sides of the airport. There is also an airfield access road from the north airfield hangars to the electrical vault. There is an ARFF access road from the fire station around the end of Runway 4.

1.23. Airport Management Structure

The airport staff are employees of the City of Vero Beach. Airport leadership includes the airport director, assistant director and operations manager, property and business administrator, commercial leasing and property administrator, airport security specialist, and administrative assistant. The City of Vero Beach Annual Comprehensive Financial Report, Fiscal Year Ended September 30, 2021 identified 12 full-time equivalent city employees at VRB. The airport is an enterprise fund of the city. The financial report listed rental income received by the airport fund of $2,631,440. The airport has more than $65 million in assets, including capital assets.

1.24. Minimum Standards

Minimum standards have been established for VRB by the Vero Beach City Council. They were most recently updated April 17, 2018, and are included in **Appendix C**. Minimum standards assist an airport in meeting its FAA grant assurances relative to economic nondiscrimination and exclusive rights (avoiding) by establishing minimum levels of service, qualifications, and facilities for the various types of entities desiring to provide commercial aeronautical services at VRB.

1.25. Voluntary Noise Abatement Program

VRB has established a voluntary noise abatement program. The program includes measures regarding flight operations and traffic pattern altitudes, hours for touch-and-go operations and maintenance (not preflight) engine run-ups. Additional details on the program are available on the airport's website.

1.26. Foreign Trade Zone

Indian River County is part of the St. Lucie County Foreign Trade Zone (FTZ) 218. An FTZ allows companies to import raw materials to be used in the manufacture of a finished product without paying customs duty. If the finished good is reexported, no customs tax is due. Duty is only paid when the goods are shipped out of the FTZ into the U.S. market. The FTZ is site-specific, allowing a company to locate an FTZ anywhere within the county.

1.27. Surrounding Airports

There are 128 public-use commercial service and general aviation airports identified in the FASP. VRB is part of the Treasure Coast Continuing FASP Planning Process Region. There are seven public-use airports within this region, including VRB, as depicted on **Figure 1.55**. New Hibiscus Airpark (X52) is the closest to VRB at 6 nautical miles. Treasure Coast International Airport (FPR) and Sebastian Municipal Airport (X26), 10 nautical miles away in Fort Pierce and Sebastian, respectively, are the closet airports with instrument approaches. The closest commercial service airport is Melbourne Orland International Airport (MLB) in the East Central Continuing FASP Planning Process Metropolitan Area. These airports are summarized in **Table 1.5**.

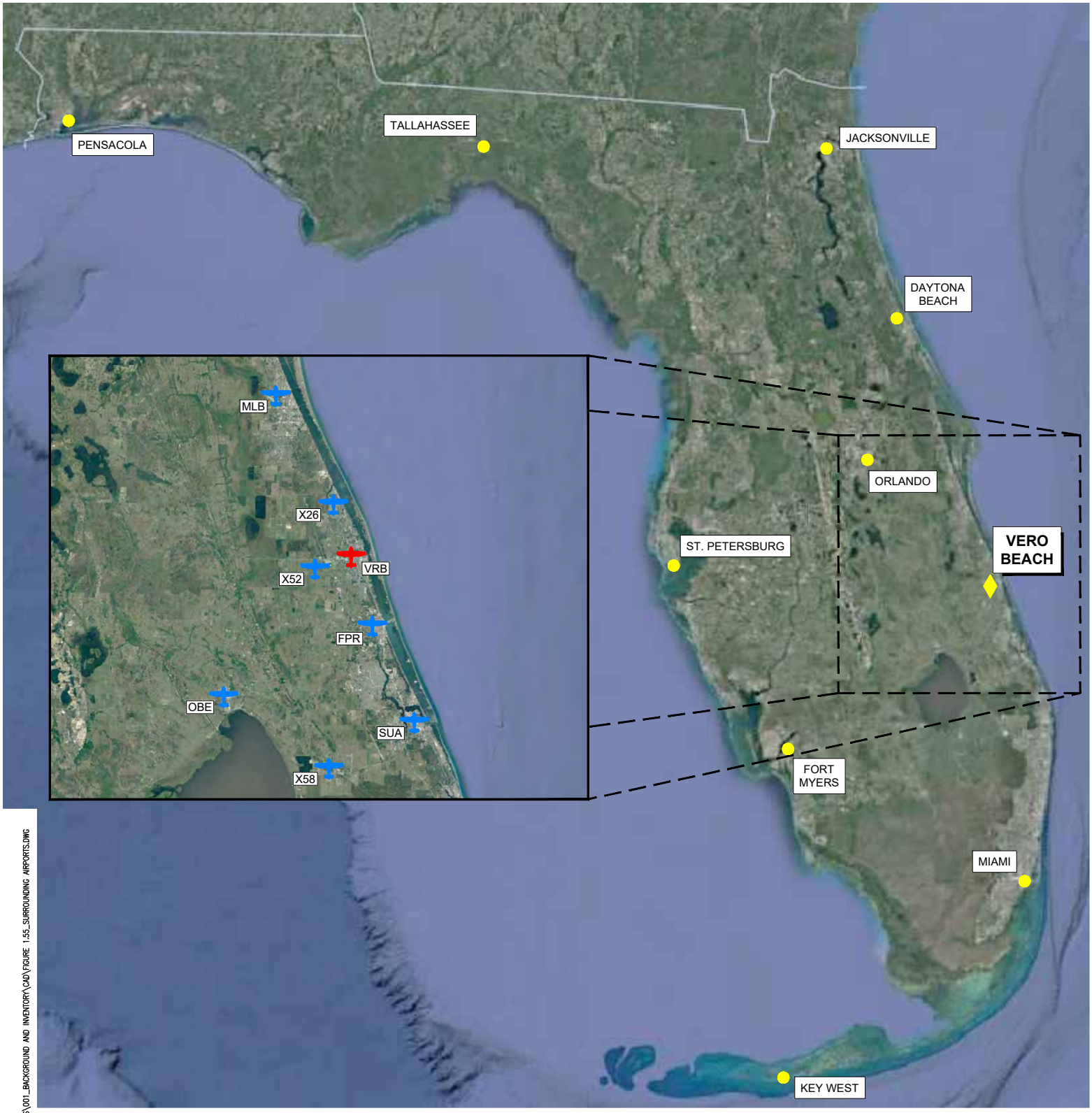
TABLE 1.5: SURROUNDING AIRPORTS

Surrounding Airports						
			Runways		Nautical	Ground
ID	Airport	NPIAS Role	#	Longest (ft.)	Air Miles	Travel Time
X52	(Vero Beach) New Hibiscus Airpark	Non-NPIAS	1	3,120 (turf)	6	14 mins
FPR	Treasure Coast International Airport	Regional	3	6,492	10	27 mins
X26	Sebastian Municipal Airport	Local	2	4,023	10	27 mins
SUA	(Stuart) Witham Field Airport	National	3	5,828	30	1 hr 1 min
OBE	Okeechobee County Airport	Regional	2	5,000	33	1 hr 5 mins
X58	Indiantown Airport	Non-NPIAS	1	6,300 (turf)	37	1 hr 3 mins
MLB	Melbourne Orlando International Airport	Primary - Nonhub	3	10,181	29	49 mins

Source: Vero Beach Regional Airport, AirNav.com, accessed October 17, 2022.

1.28. Aircraft Accidents

The National Transportation Safety Board (NTSB) is an independent federal agency responsible for investigating civil aviation accidents in the United States, determining the probable cause of accidents, and issuing safety recommendations to help prevent future events. The NTSB maintains the Aviation Accident Database and Synopses. This database was reviewed in October 2022 to determine if any prior accidents or incidents at VRB contained outstanding safety recommendations for the airport, which would be considered during the facilities requirement phase of the airport master plan. The database contained 38 accidents and incidents associated with VRB from 1982 to 2007, see **Appendix D**. There were three incidents, 33 nonfatal accidents, and two fatal accidents noted. There were no outstanding airport-related safety recommendations.



LEGEND

VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT WITHIN 30 NAUTICAL MILES

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0 N.T.S.

GRAPHIC SCALE IN FEET

Source: Aerial Photography, Google Earth, accessed October 18, 2022.

AUG 12, 2024 11:47 AM ALEXA02176
I:\20J065\20A0069W01\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.55_SURROUNDING AIRPORTS.DWG

VERO BEACH REGIONAL AIRPORT MASTER PLAN	SURROUNDING AIRPORTS	DRAWN BY: JA CHECKED BY: SZ	FIGURE 1.55

1.29. Meteorological Data

Aircraft performance is influenced by weather, especially temperature and wind. VRB's weather is influenced by its location near the Atlantic Ocean along the east coast of Florida. The hottest months are July and August, with a mean maximum daily temperature of 90.5 and 90.6 degrees F.[20] The summer months are the wettest months, averaging 5.5 to more than 7 inches of rain per month. The area averaged 50 inches of rain per year from 2000 to November 2022. The weather at VRB is also influenced by tropical storms and hurricanes.

1.30. Wind Analysis

Ideally, runways are aligned so airplanes take off and land into the wind and minimize any crosswind component. Small, light aircraft are more affected by crosswinds than larger, heavier aircraft. The FAA design standards recommend 95% wind coverage. This means that 95% of the time, the crosswind does not exceed the demonstrated crosswind component (design capability or wind speed 90 degrees to the runway) for the aircraft. **Table 1.6** lists the crosswind components used by the FAA for planning. The crosswind coverage requirements are based on the runway design code (RDC). The RDC is based on aircraft size and speed. The RDE is defined by a letter designation followed by a Roman numeral. The letter identifies the aircraft approach category (AAC) based on aircraft approach speeds, and the Roman numeral indicates the airplane design group (ADG) based on wingspan and, less commonly, tail height.

TABLE 1.6: FAA CROSSWIND COMPONENTS

FAA Wind Coverage Requirement	
Runway Design Code (RDC)	**Crosswind Component**
A-I and B-I	10.5 knots
A-II and B-II	13 knots
A-III, B-III, and C-I through D-III	16 knots

The FAA standard for ALPs is to collect 10 consecutive years of wind data. The wind data for VRB was collected from the FAA's Airport Data and Information Portal (ADIP) website. This portal helps the FAA collect airport and aeronautical data to meet the demands of the Next Generation Air Transportation System. The data comprises wind direction and speed readings (every hour or more frequently) over the most recent complete 10-year span. **Table 1.7** shows the wind data for VRB all-weather, instrument flight rules (IFR), and visual flight rules (VFR) conditions.

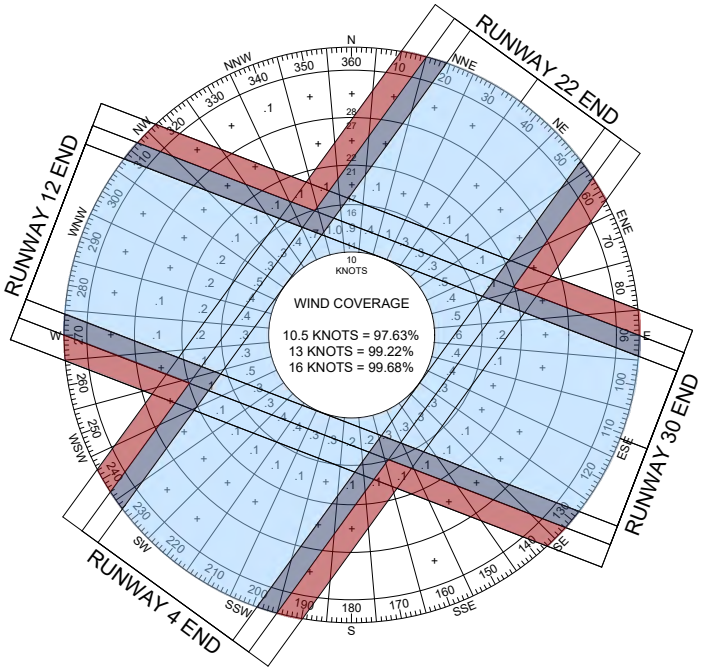
On the 2016 ALP, Runway 12R/30L is designated as ARC C-III, Runway 12L/30R was designated as ARC B-II, and Runway 4/22 was designated as ARC C-II. These classifications will be revisited as part of the aviation activity forecasting but provide a starting point for this initial review. Based on FAA guidance, as shown in Table 1.7, runways designated as ARC B-II should have 95% wind coverage for up to 13 knots. Runways for larger aircraft should have 95% wind coverage for the 16-knot crosswind component. **Figure 1.56** shows wind rose data for VRB. Based on the critical aircraft in the previous ALP, the current runway system appears to meet the FAA wind coverage requirements. The coverage will be validated based critical aircraft identified in this study as part of the facility requirements.

[20] National Weather Service monthly climate normals (1991-2020) for Vero Beach Area, FL, https://www.weather.gov/wrh/Climate?wfo=mlb, accessed December 27, 2022.

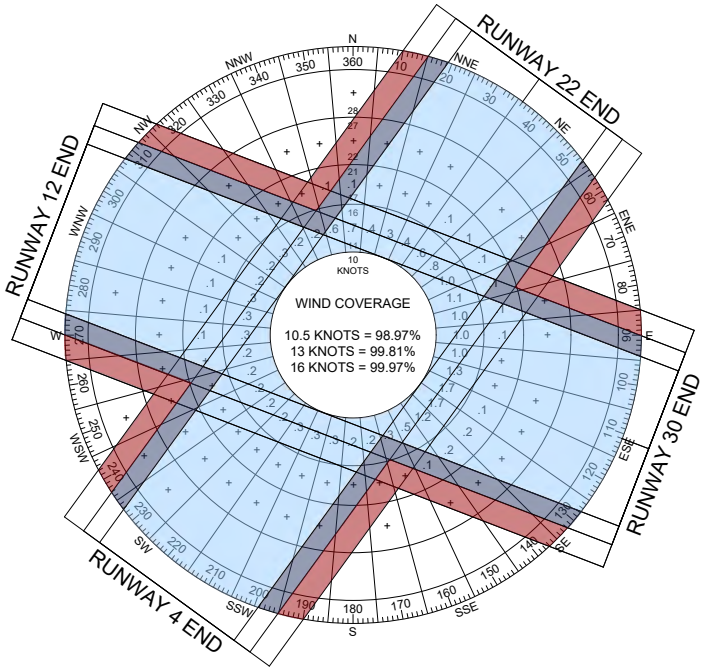
TABLE 1.7: WIND DATA

Wind Data Coverage									
Runway	All Weather			IFR			VFR		
	10.5 knots	13 knots	16 knots	10.5 knots	13 knots	16 knots	10.5 knots	13 knots	16 Knots
Runway 4/22	88.52%	93.60%	98.49%	90.61%	94.39%	97.53%	88.29%	93.51%	98.59%
Runway 12/30	92.80%	96.38%	99.19%	91.67%	95.44%	98.47%	92.90%	96.47%	99.27%
Combined	98.84%	99.75%	99.95%	97.63%	99.22%	99.68%	98.97%	99.81%	99.97%

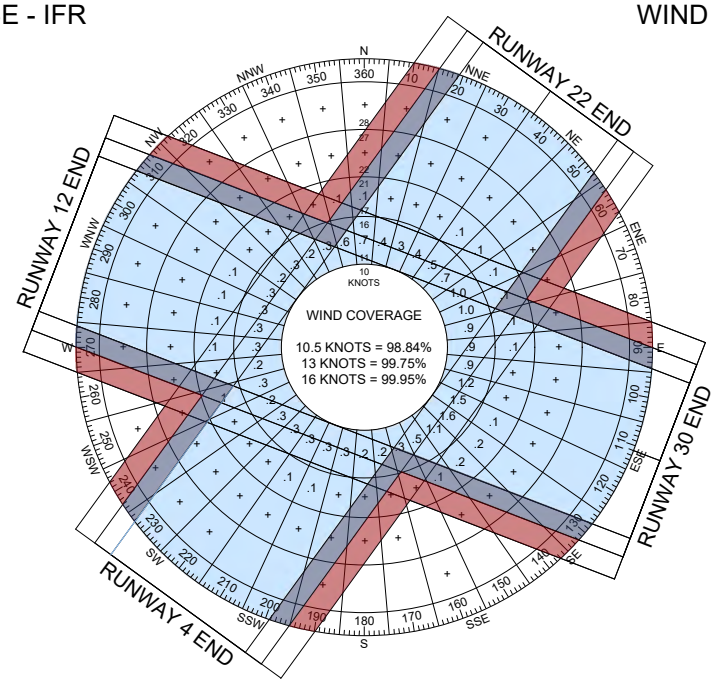
Source: FAA ADIP, VRB Wind Data from 2011–20, Windrose (faa.gov), accessed October 2022.



WIND ROSE - IFR



WIND ROSE - VFR



WIND ROSE - ALL WEATHER

WIND DATA

RUNWAY	ALL WEATHER			IFR			VFR		
	10.5 KNOTS	13 KNOTS	16 KNOTS	10.5 KNOTS	13 KNOTS	16 KNOTS	10.5 KNOTS	13 KNOTS	16 KNOTS
RUNWAY 4/22	88.52%	93.60%	98.49%	90.61%	94.39%	97.53%	88.29%	93.51%	98.59%
RUNWAY 12/30	92.80%	96.38%	99.19%	91.67%	95.44%	98.47%	92.90%	96.47%	99.27%
COMBINED	98.84%	99.75%	99.95%	97.63%	99.22%	99.68%	98.97%	99.81%	99.97%

LEGEND
- 10.5 KNOTS CROSSWIND COMPONENT
- 13 KNOTS CROSSWIND COMPONENT
- 16 KNOTS CROSSWIND COMPONENT

Source: FAA adip Wind Data, VRB Wind Data from 2011-2020, accessed October 2022.

0 N.T.S.
GRAPHIC SCALE IN FEET

VERO BEACH | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

WIND DATA

DRAWN BY: JA
CHECKED BY: SZ

FIGURE 1.56

AUG 12, 2024 11:49 AM ALECIA02176
I:\20J065\20A0069W01\ADMIN\14-REPORTS\001_BACKGROUND AND INVENTORY\CAD\FIGURE 1.56_WIND DATA.DWG

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2. Aviation Activity Forecasts

2.1. Introduction

This chapter presents projections of aviation activity that form the basis of future development needs for Vero Beach Regional Airport (VRB or Airport). Previous activity forecasts, industry trends, local socioeconomic conditions, and historic data were analyzed and applied to methodologies accepted by both the Federal Aviation Administration (FAA) and Florida Department of Transportation (FDOT) to develop these forecasts. The standard planning period for an airport master plan is 20 years and the key planning periods include the 5-, 10-, and 20-year horizons. Since this study was largely conducted in 2023, the forecasts are presented for 2028, 2033, and 2043, using data obtained through the federal fiscal year 2022, ending on September 30th. The aviation activity forecast was approved by the FAA on July 21, 2024. A copy of the forecast approval letter is included in **Appendix E.**

Effects of COVID-19

The 2020 outbreak of COVID-19 in the U.S. caused significant disruption to businesses, including the aviation industry, through travel restrictions, stay-at-home orders, quarantine requirements, and an increased reliance on video conferencing. While the pandemic impacted the level of activity at airports across the nation, this has been temporary as the aviation industry continues to recover. In fact, most airports in Florida are close to recording pre-COVID-19 levels of activity; especially given the migration of people and businesses that have occurred since the pandemic. Regardless, while the recommended forecasts of this study are considered conservative, they will be utilized to create planning activity levels for certain facility requirements in the following chapter.

2.2. Recent Projections of Aircraft Activity

The most recent local, state, and national forecasts for VRB include those prepared for the 2016 Airport Layout Plan Update, FDOT's Florida Aviation System Plan (FASP), and the FAA's 2022 Terminal Area Forecast (TAF). Each previous forecast projects based aircraft and annual operations for the Airport as summarized in the following sections. As required by the FAA, a direct comparison of the recommended forecasts must be made relative to the TAF. This comparison is included at the end of this chapter.

2016 Airport Layout Plan Update

The 2016 Airport Layout Plan Update included forecasts which were projected over a 20-year planning period using 2013 as the base year. The expected number of based aircraft and annual operations for the key planning horizons of that study are included in **Table 2.1**.

TABLE 2.1: 2016 AIRPORT LAYOUT PLAN UPDATE

	Based Aircraft	Annual Operations
Base Year		
2013	212	185,699
Forecast		
2018	233	199,653
2023	256	214,848
2033	310	249,460
Average Annual Change (2013-2033)	1.9%	1.5%

Source: 2016 Airport Layout Plan Update.

Florida Aviation System Plan

The Florida Aviation System Plan (FASP) is a comprehensive planning and development guide for the state's public airports. The FASP ensures that Florida has an effective statewide aviation transportation system which provides a link to the global air transportation network and effectively interfaces with regional surface transportation systems. In support of these goals, FDOT's Aviation Office provides regular updates to historic aviation data and prepares forecasts of the based aircraft, annual operations, and passenger enplanements (as applicable) for each public airport in the state. The FASP information is included as part of the Florida Aviation Database (FAD) with the most recent providing historic based aircraft through 2021 and a projection out to 2038, while the annual operations include historic data though 2016 and a projection out to 2035. FASP data for the key forecast horizons of this study, including an extrapolation to 2043, are shown in **Table 2.2**. The FASP did not include any passenger enplanement data for VRB.

TABLE 2.2: FLORIDA AVIATION SYSTEM PLAN

	Based Aircraft	Annual Operations
Base Year		
2016	232	213,611
2021	202	-
Forecast		
2028	234	247,950
2033	257	263,839
2043 (extrapolated)	313	298,738
Average Annual Change (Base Year-2043)	2.0%	1.3%

Source: Florida Aviation Database and ESA Analysis, 2023.

FAA Terminal Area Forecast

A Terminal Area Forecast (TAF) is prepared annually by the FAA to meet the budget and planning needs of the agency, as well as to provide information for use by state agencies, local authorities, the aviation industry, and the public. Projections in the FAA TAF are prepared for each airport in the National Plan of Integrated Airport Systems (NPIAS). The 2022 TAF (issued in February 2023) utilizes a 2021 base year for based aircraft and annual operations with projections through 2050. The based aircraft and annual operations for the forecast horizons of this study are included in **Table 2.3**. It should be noted that while the TAF includes annual enplanement figures for VRB, they have been flatlined at 1,107 passengers each year from 2022 to 2050.

TABLE 2.3: 2022 FAA TERMINAL AREA FORECASTS

	Based Aircraft	Annual Operations
Base Year		
2021	204	123,306
Forecast		
2028	243	260,097
2033	273	263,504
2043	349	270,557
Average Annual Change (2021-2043)	2.5%	3.6%

Note: Annual Operations based on FAA fiscal year ending September 30th.

Source: 2022 FAA Terminal Area Forecast (issued February 2023).

2.3. Factors Influencing Forecast Approach

To guide the forecasting effort, an understanding of the relationship between industry trends and the Airport operating environment is essential. Using historic information and data, it is possible to compare how changes in the general aviation industry and local area economics may have influenced activity at VRB. Additionally, projections for the commercial airline business will allow educated assumptions to be made as to how the Airport's new passenger service offerings might evolve in the future.

National, regional, and local trends with the potential to impact existing, expanded, or even create new aviation activity were identified from several sources. In addition to the historic data and recent activity forecasts, material was also collected from other reports, studies, and industry articles including, but not limited to:

- General Aviation Manufacturers Association (GAMA) Annual Aircraft Shipment Reports
- 2022 FAA Aerospace Forecast (2022-2042)
- FAA Monthly Business Jet Reports

Noteworthy information from these sources is summarized in the following sections.

State of the General Aviation Industry

General aviation encompasses all segments of the aviation industry except for activity that is conducted by commercial airlines or the military. Examples include pilot training, law enforcement flights, medical transportation, aerial surveys, aerial photography, agricultural spraying, advertising, and various forms of recreation, not to mention business, corporate, and personal travel. Historically, the industry experiences some very significant fluctuations, both positive and negative.

Data from the General Aviation Manufacturer's Association (GAMA) showed that general aviation aircraft manufactured in the U.S. fell from a high of 3,279 aircraft in 2007 to 1,334 in 2010 as a result of the Great Recession. The number of new general aviation shipments has increased most every year since; however the 1,686 delivered in 2021 are only slightly more than half the deliveries before the Great Recession.

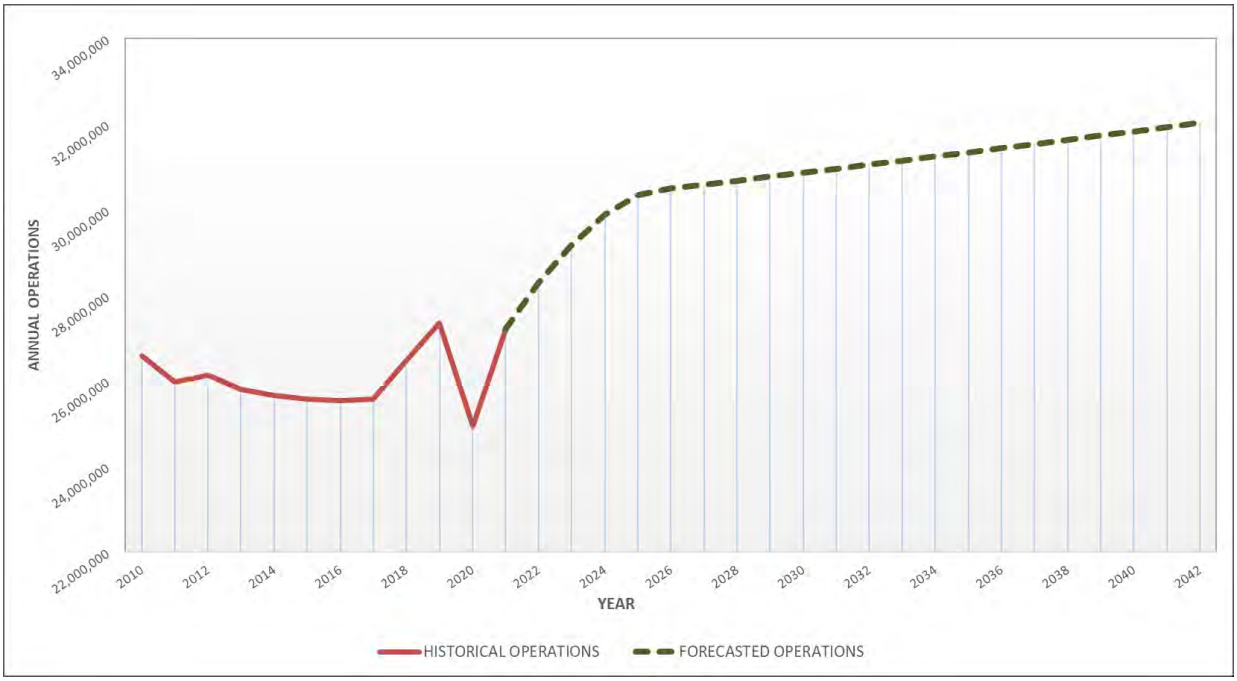
Taking both the manufacturing rates and aircraft retirements into consideration, the FAA tracks and projects the nation's active general aviation fleet. Overall, the 2022 FAA Aerospace Forecast projects the number of active general aviation aircraft to only increase slightly through 2042; however, this trend is not evenly distributed across the different aircraft types. For example, the number of the most common single-engine piston aircraft are expected to decline 0.4 percent annually through 2042 while the number of active jet aircraft are projected to increase 2.6 percent each year.

For the purposes of the forecasts, it is important to note that the headquarters and primary manufacturing facility for Piper Aircraft, Inc. is in the City of Vero Beach, adjacent to airport property. Piper Aircraft accesses the airport via a negotiated agreement with VRB as the manufacturing facilities and offices are on privately owned property. The annual operations conducted by Piper's aircraft are included in the airport traffic control tower (ATCT) counts. These operations are very limited since each newly manufactured aircraft is only flown the minimum hours required prior to customer delivery. Likewise, the new aircraft, as well as those flown in for service, are not included in the based aircraft counts for VRB since they are off airport property and do not remain at Piper Aircraft very long.

The FAA also tracks and projects the number of hours flown by general aviation aircraft, which overall is expected to increase at a rate of 1.1 percent each year through 2042. Similar to the fleet projections, single-engine piston aircraft show a decline in activity of 0.3 percent each year while the hours flown by jets are forecast to grow 3.8 percent annually. The jet aircraft projections are supported by figures in the FAA's monthly Business Jet Reports which shows that operations conducted by general aviation jet aircraft consistently increased between 2009 and 2019. In 2020, annual jet activity dropped 23 percent at the beginning of the COVID-19 pandemic, but quickly rebound 46 percent in 2021 to an all-time high.

Using the fleet size, hours flown, utilization rates, as well as other industry factors, each year the FAA projects the general aviation operations expected to be handled by the nation's towered airports. **Figure 2.1** depicts the historic trend and illustrates how general aviation activity rebounded in just two years from the impacts of the COVID-19 pandemic. In fact, the 2022 Aerospace Forecast projects general aviation activity at the nation's towered airports to increase 2.8 percent each year through 2025, with the growth slowing to 0.3 percent for the rest of the years through 2042.

FIGURE 2.1: NATION'S GENERAL AVIATION OPERATIONS (ALL TOWERED AIRPORTS)



Source: 2022 FAA Aerospace Forecast.

Passenger Airline Industry Outlook

In broad terms, the U.S. passenger airline industry is characterized by mainline and regional carriers that provide scheduled domestic and international service. The FAA defines mainline carriers as those primarily operating aircraft with 90 or more seats, while the regionals largely utilize aircraft with 89 or less seats, on routes that feed the mainline carriers.

As a certified 14 Code of Federal Regulations Part 139 airport, VRB has the ability to support commercial airline service. Using their 50 and 70 seat regional jet fleet, Elite Airways provided passenger service at VRB between 2017 and 2022. Due to the size of their aircraft, the passenger enplanements by Elite Airways were reported by the FAA as regional or commuter service. In February 2023, Breeze Airways began providing commercial passenger at VRB using their fleet of 118 and 126 seat aircraft. While this size aircraft is typically associated with mainline carriers, Breeze Airways entered the airline market in 2021 as a low cost carrier providing non-stop flights to secondary airports in underserved areas. The airline does not currently operate under any contracts with mainline carriers and in fact is focused on bypassing major hubs to provide shorter flight times. As such, characteristics and projections for both mainline and regional carriers were evaluated.

Overall, the FAA has an optimistic outlook for the mainline and regional passenger carriers in its 2022 Aerospace Forecast. For the domestic market, the mainline and regional carriers combined are projected to increase the number of passenger enplanements an average of 4.7 percent each year through 2042. System-wide capacity, also known as available seat miles (ASMs), is projected to increase an average of 4.0 percent each year through 2042. Revenue passenger miles (RPMs), the basic measure of the airline passenger traffic produced, are expected to increase at an annual rate of 4.8 percent for the domestic market of the U.S. air carriers.

Commercial airlines are also projected to continue to maximize the utilization of their aircraft. Prior to the COVID-19 pandemic, both mainline and regional carriers had consistently increased their average load factor, indicating how efficiently seats were being filled. While domestic load factors were down in 2020 and 2021, they are increasing and projected by the FAA to continue to do so through 2042. Regardless, the average load factors are not expected to reach the previous level in 2019; hence the reason the FAA has forecasted ASMs to increase at a slower rate than RPMs, as the airlines seek to restore load factors.

Local Socioeconomic Factors

A number of socioeconomic indicators were evaluated that typically have a direct relationship to the use of aviation and therefore airport activity. Overall and average annual growth rates for Indian River County, the State of Florida, and the U.S. are presented based on data obtained from Woods & Poole Economics, Inc. The Woods & Poole projections are updated annually, utilizing models which consider specific local conditions using historic data back to 1969. While the current historic data sets from Woods & Poole cover the period from 1969 to 2020, only data back to 2011 are shown in the tables that follow, reflecting the general trends over the past 10 years.

Population

Historically Indian River County has had overall and average annual population growth rates higher than both Florida and the U.S. This growth can be attributed to the fact that it is not an incredibly population-dense county compared to others in the state, with plenty of room for growth. Though at a slower rate in the future, the population growth for Indian River County is expected to continue to outpace the state and nation through 2043.

TABLE 2.4: TOTAL POPULATION

	Indian River County	Florida	United States
Historic Data			
2011	138,905	19,039,272	311,785,264
2012	140,080	19,269,341	314,280,968
2013	141,309	19,502,665	316,665,134
2014	143,663	19,788,530	319,193,123
2015	146,461	20,137,441	321,748,258
2016	149,977	20,529,207	324,281,918
2017	152,739	20,862,726	326,534,147
2018	155,285	21,124,221	328,451,784
2019	157,783	21,345,015	330,145,373
2020	160,345	21,569,932	331,501,080
Overall Growth (2011-2020)	15.4%	13.3%	6.3%
Average Annual Change (2011-2020)	1.6%	1.4%	0.7%
Forecast			
2028	178,054	23,609,587	347,672,031
2033	189,103	24,939,250	358,560,569
2043	213,298	27,617,810	378,928,870
Average Annual Change (2020-2043)	1.2%	1.1%	0.6%

Source: Woods & Poole Economics, Inc., 2022.

Employment

Employment data provides an indication of the economic stability of a geographic area. As shown in the table below, while Indian River County employment has steadily increased since 2011, the state has had the greatest growth. However, it should be noted that only Indian River County's employment increased in 2020. As the county continues to expand its population base, so too will employment to support the area's growth initially (such as real estate, banking, and construction) as well as afterwards (to include retail, health care, education, etc.). Woods & Poole's long-term projections show employment levels continuing to increase for Indian River County, albeit at a somewhat slower rate than the last decade.

TABLE 2.5: TOTAL EMPLOYMENT

	Indian River County	Florida	United States
Historic Data			
2011	138,905	10,036,635	176,091,719
2012	140,080	10,249,019	178,979,693
2013	141,309	10,539,261	182,325,107
2014	143,663	10,937,167	186,233,744
2015	146,461	11,367,159	190,325,797
2016	149,977	11,682,231	193,425,890
2017	152,739	12,097,885	196,393,122
2018	155,285	12,555,591	200,280,221
2019	157,783	12,761,512	201,644,205
2020	160,345	12,148,602	190,776,766
Overall Growth (2011-2020)	15.4%	21.0%	8.3%
Average Annual Change (2011-2020)	1.6%	2.1%	0.9%
Forecast			
2028	178,054	14,918,493	226,480,417
2033	189,103	16,155,363	240,120,076
2043	213,298	18,700,890	266,780,547
Average Annual Change (2020-2043)	1.2%	1.9%	1.5%

Source: Woods & Poole Economics, Inc., 2022.

Income

Personal income per capita represents the ratio of total personal income (before taxes) to the total resident population. Adjustments are also made if the income was earned in a different area than where the person resides. In recent years, income per capita in Indian River County has outpaced both the state of Florida as well as the nation. For the 20-year planning horizon of this study, the Woods & Poole data projects the county, state, and nation to all have higher and nearly equal growth in personal income per capita.

TABLE 2.6: TOTAL PERSONAL INCOME PER CAPITA (IN 2022 DOLLARS)

	Indian River County	Florida	United States
Historic Data			
2011	$58,125	$40,517	$42,755
2012	$61,562	$41,545	$44,557
2013	$61,301	$41,173	$44,808
2014	$66,946	$43,531	$46,898
2015	$69,527	$45,678	$48,738
2016	$72,454	$46,474	$49,626
2017	$75,823	$49,041	$51,587
2018	$80,867	$51,466	$53,832
2019	$84,273	$53,399	$55,739
2020	$85,754	$56,096	$59,147
Overall Growth (2011-2020)	47.5%	38.5%	38.3%
Average Annual Change (2011-2020)	4.4%	3.7%	3.7%
Forecast			
2028	$131,572	$84,547	$87,818
2033	$165,172	$107,256	$111,031
2043	$258,171	$172,108	$177,039
Average Annual Change (2020-2043)	4.9%	5.0%	4.9%

Source: Woods & Poole Economics, Inc., 2022.

Households

Households represent the number of occupied housing units, which include homes, apartments, a group of rooms, or single rooms occupied as separate living quarters. The number of households does not include facilities such as retirement homes, college dormitories, military barracks, or prisons. The growth in the number of households for Indian River County has been slightly higher than that of the state and considerably higher than the nation. Similarly, the projection over the next 20 years is that the household growth rate for Indian River County will continue to outpace the state and nation.

TABLE 2.7: TOTAL NUMBER OF HOUSEHOLDS

	Indian River County	Florida	United States
Historic Data			
2011	61,231	7,610,452	119,393,459
2012	61,962	7,710,497	120,622,924
2013	62,798	7,824,760	122,070,204
2014	63,556	7,898,501	122,915,304
2015	64,661	8,013,585	124,348,127
2016	65,649	8,127,749	125,657,037
2017	66,365	8,189,687	126,141,105
2018	67,292	8,311,059	127,583,148
2019	68,120	8,414,149	128,658,107
2020	68,481	8,442,415	128,614,009
Overall Growth (2011-2020)	11.8%	10.9%	7.7%
Average Annual Change (2011-2020)	1.3%	1.2%	0.8%
Forecast			
2028	78,478	9,486,327	137,739,006
2033	83,461	10,023,785	141,930,835
2043	93,598	11,015,115	148,517,499
Average Annual Change (2020-2043)	1.4%	1.2%	0.6%

Source: Woods & Poole Economics, Inc., 2022.

Gross Regional Product

Gross Regional Product (GRP) is based on the U.S. Bureau of Economic Analysis gross domestic product data for each state. The nation's figures represent a total for all states while the individual county data has been estimated by Woods & Poole. The county data is calculated by allocating the state GRP to the counties based on the proportion of total state earnings by employees originating from a particular county. As shown in the table below, all were impacted in 2020 due to the COVID-19 pandemic. Regardless, the GRP growth for Indian River County has outpaced the state and the nation over the past decade. While this trend is expected to continue, it will be at a somewhat lower rate in the future.

TABLE 2.8: GROSS REGIONAL PRODUCT (IN MILLIONS OF DOLLARS)

	Indian River County	Florida	United States
Historic Data			
2011	$4,631	$769,319	$15,777,260
2012	$4,758	$778,545	$16,140,743
2013	$4,872	$800,907	$16,506,385
2014	$5,066	$827,794	$16,947,640
2015	$5,525	$881,066	$17,547,297
2016	$6,012	$915,382	$17,845,990
2017	$6,096	$945,364	$18,265,187
2018	$6,230	$976,627	$18,835,683
2019	$6,529	$1,015,662	$19,325,095
2020	$6,312	$994,413	$18,664,909
Overall Growth (2011-2020)	36.3%	29.3%	18.3%
Average Annual Change (2011-2020)	3.5%	2.9%	1.9%
Forecast			
2028	$8,312	$1,260,652	$22,608,951
2033	$9,433	$1,432,146	$24,974,961
2043	$11,963	$1,821,430	$30,073,375
Average Annual Change (2020-2043)	2.8%	2.7%	2.1%

Source: Woods & Poole Economics, Inc., 2022.

Woods & Poole Wealth Index

Woods & Poole calculates a wealth index which provides a measure of relative total personal income per capita weighted by the source of income. In calculating the index, relative income per capita is weighted positively for income with a higher proportion from dividends, interest, and rent and negatively for income with a higher proportion from transfer payments (income where no goods or services are provided). The index is also based on weighted averages of the regional income per capita; regional income from dividends, interest, and rent; and regional income from transfer payments. Since Woods & Poole consider dividends, interest, and rent income good indicators of assets, their resulting index provides a measure of relative wealth to that of the nation as a whole. Although the county's index is marginally lower than its peaks pre-COVID-19, Indian River County is well above the national average and continues to rank among the wealthiest of Florida's 67 counties.

TABLE 2.9: WOODS & POOLE WEALTH INDEX (COMPARED TO UNITED STATES)

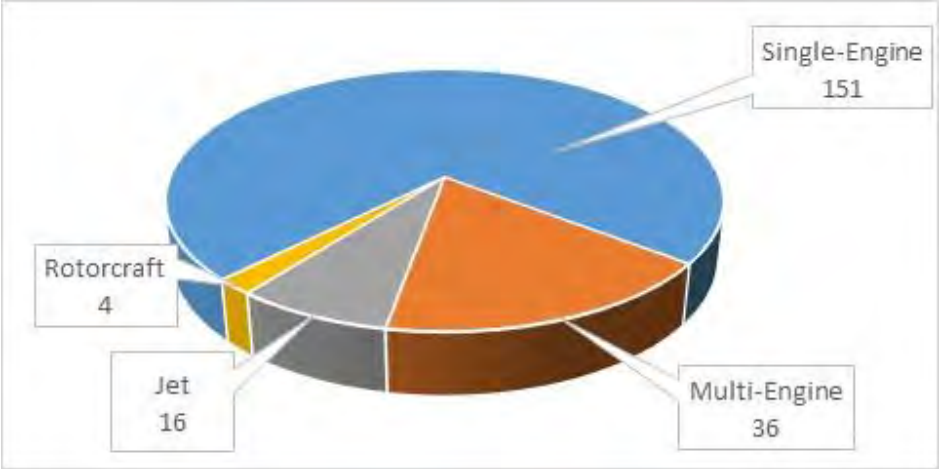
	Indian River County	Florida	United States
Historic Data			
2011	145	99	100
2012	146	98	100
2013	145	96	100
2014	150	97	100
2015	149	98	100
2016	152	98	100
2017	152	99	100
2018	155	100	100
2019	156	100	100
2020	153	100	100
Overall Growth (2011-2020)	5.1%	0.8%	-
Average Annual Change (2011-2020)	0.6%	0.1%	-
Forecast			
2028	154	100	100
2033	153	100	100
2043	151	101	100
Average Annual Change (2020-2043)	< 0.5%	< 0.4%	-

Source: Woods & Poole Economics, Inc., 2022.

2.4. Based Aircraft

Based aircraft are those aircraft that are operational, airworthy, and kept at an airport for a majority of the year (more than six months). Information on the aircraft based at an airport is documented in the FAA's National Based Aircraft Inventory Program (NBAIP). Through this program the FAA determines whether the aircraft reported have a current registration, then a check is made to see if any of the aircraft have been reported by another airport. This creates a validated number of based aircraft for a given airport. This count includes a break-out of the single-engine, multi-engine, jet, and rotorcraft models in the based fleet. It is worth noting that the NBAIP does not count glider, military, or ultralight aircraft since these may not always have a tail number for registration. These categories are however included as part of the FAA Airport Master Record (Form 5010). **Figure 2.2** illustrates the mix of the 207 aircraft based at VRB in 2022.

FIGURE 2.2: BASED AIRCRAFT MIX IN 2022



Source: FAA National Based Aircraft Inventory Program.

Based Aircraft Projections

The number of aircraft owners projected to base their aircraft at VRB is an important consideration for airfield planning since it is a key gauge of the demand for facilities. Projections of based aircraft also provide an indication of the anticipated growth in general aviation activity.

Historic Growth

Given the cyclical nature of the general aviation industry, historic changes in the number of based aircraft are important to consider when analyzing potential growth. As shown in **Table 2.10**, over the last 10 years the number of based aircraft peaked in 2016 at 232 and then began to decrease for three years down to 173 in 2019. This decline is primarily attributed to the fact that prior to the 2021 sale of Flight Safety to Skyborne Airline Academy, Flight Safety sold off approximately 50 aircraft; which represented nearly half of the flight school's fleet. Since 2019, the based aircraft count has increased every year at VRB, including throughout the COVID-19 pandemic. On average, the number of based aircraft have declined annually at a rate of 0.1 percent between 2013 and 2022. Since the historic growth was impacted by the sale of a significant number of flight school aircraft, it was not utilized to create a new forecast for based aircraft.

TABLE 2.10: HISTORIC BASED AIRCRAFT COUNTS

Year	Single-Engine	Multi-Engine	Jet	Rotorcraft	Total
2013	157	44	4	4	209
2014	159	45	6	4	214
2015	155	44	6	4	209
2016	178	44	6	4	232
2017	161	41	6	2	210
2018	148	39	6	1	194
2019	126	40	6	1	173
2020	131	44	6	2	183
2021	144	37	18	3	202
2022	151	36	16	4	207

Source: FAA National Based Aircraft Inventory Program.

Previous Projections

The 2016 Airport Layout Plan Update and FASP projected the based aircraft at VRB to increase at very similar average annual rates (1.9 and 2.0 percent respectively). When these are applied to the current count of 207, the resulting projections are for 308 or 314 based aircraft by 2043 (see **Table 2.11**). The FAA's TAF is updated annually with the most recent version projecting the based aircraft at VRB to increase at an average annual rate of 2.5 percent. When applied to the current based aircraft count, the TAF growth rate yields a forecast of 351 based aircraft by 2043 (see **Table 2.11**).

National Active Fleet Forecasts

Each year the FAA provides a long-term projection for the active general aviation fleet as part of their Aerospace Forecast. As noted previously, the 2022 FAA Aerospace Forecast only projects a slight increase in the active general aviation fleet through 2042. When applied to the current number of based aircraft, this average annual growth (0.1 percent) results in a forecast of 221 at VRB in 2043. This is only an increase of five additional based aircraft during the 20-year horizon. Given the Airport maintains a current hangar wait list with 90 aircraft in October 2022; the FAA's anticipated growth for the active general aviation fleet is not considered applicable and therefore was not utilized to create a new forecast.

Regression Analysis

Often times regression analysis can be an effective tool to forecast based aircraft since population, income, employment, industry data, and other variables typically generate reliable projection models. However, no statistically significant regression models could be created from the historic based aircraft information and area socioeconomic data. Given the that the socio-economic data for the area has had positive, linear growth over the last 10 years, none of the simple linear or multiple regression models created would correlate to the sale of approximately 50 based aircraft and an overall slight decline in the historic number of based aircraft over the same period.

Recommended Based Aircraft Forecast

For the recommended based aircraft projection, a forecast based on the average growth expected by FDOT and FAA was adopted. Even though the most recent forecasts by FDOT and FAA do not have the same base year data for the number of aircraft at VRB, they are both based on methodologies which are updated regularly. This balances the growth expected by the FAA in their overall evaluation of the nation's general aviation fleet; while also incorporating elements from FDOT's regional and local level perspectives.

As reflected in **Table 2.11**, this results in a 2.3 percent average annual growth for a total of 334 based aircraft at the end of the 20-year planning period. Within the 10-year planning horizon, the recommended forecast shows demand for an additional 59 aircraft to be based at VRB by 2033. Since the airport has a 100 percent hangar occupancy rate, there are 90 aircraft confirmed on the official hangar wait list, and there is no indication by either of the flight schools to significantly increase their fleets, this is considered to be a relatively conservative projection. This is especially true since relatively few on the current wait list are existing tenants and the master plan forecasts should be based on an unconstrained scenario. Additionally, the Airport will have the ability to accommodate additional based aircraft over the next 10 years given the Taxiway E aircraft parking apron was completed in 2021. Located in the midfield, this 32,000 square yard apron will ultimately support six clearspan hangars providing a total of approximately 86,500 square feet of space. The first two 20,000 square foot hangars are expected to be constructed in the next two years.

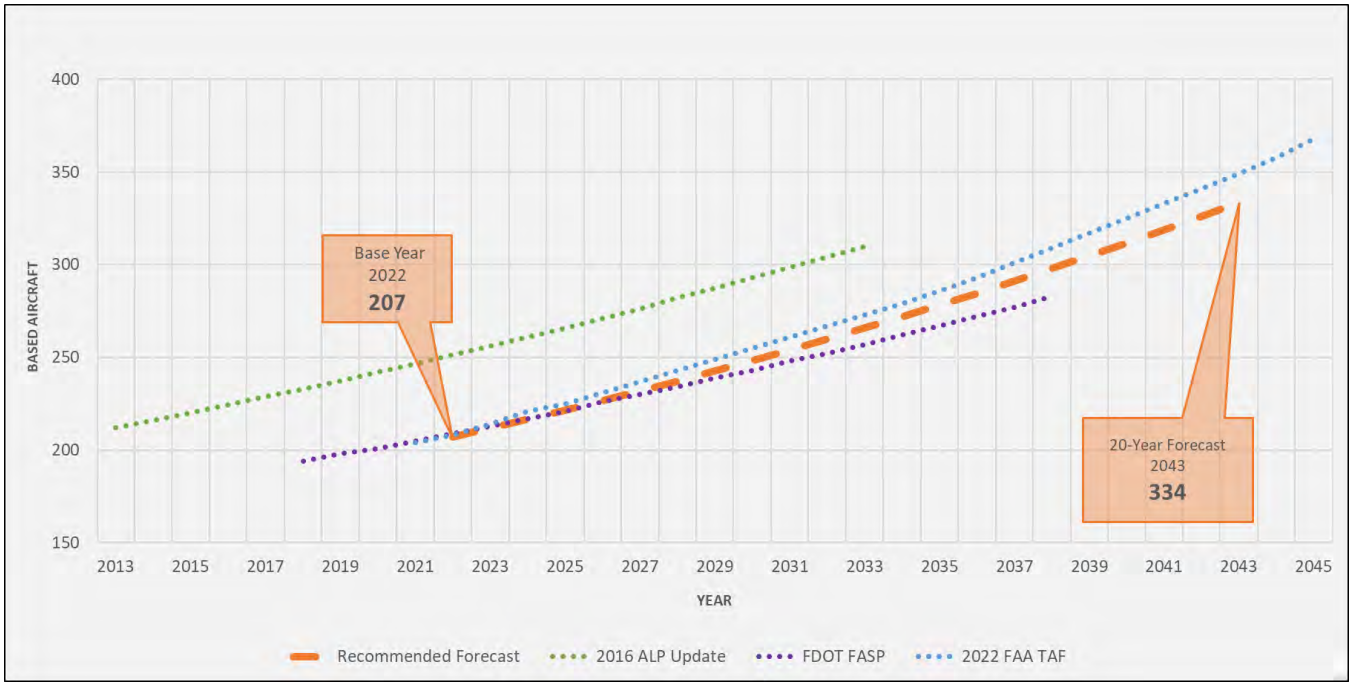
TABLE 2.11: COMPARISON OF BASED AIRCRAFT PROJECTIONS

	2016 ALPU[a]	FASP[a]	2022 FAA TAF[a]	Recommended
Base Year				
2022	207	207	207	**207**
Forecast				
2028	232	233	241	**237**
2033	255	257	273	**266**
2043	308	314	351	**334**
Average Annual Change (2022-2043)	1.9%	2.0%	2.5%	**2.3%**

[a] Applies growth projection of previous study to current based aircraft count.

Source: ESA Analysis, 2023.

FIGURE 2.3: COMPARISON OF RECOMMENDED BASED AIRCRAFT FORECAST TO PREVIOUS PROJECTIONS



Source: Previous Forecasts and ESA Analysis.

Forecast of Based Aircraft Fleet Mix

Projecting the types of based aircraft is necessary since different aircraft require different facilities. For the short-term, the future based aircraft fleet mix was primarily determined by the specific aircraft types on the current hangar wait list. For the balance of the 20-year planning horizon, the FAA's projections for the active general aviation fleet were evaluated and compared to the aircraft types at VRB. While the overall growth in the nation's active fleet was not utilized to forecast based aircraft, the individual projections of aircraft types are useful in predicting the future based aircraft fleet mix. In addition, information obtained during the master plan interviews and production data from the aircraft manufacturers was also used to estimate the future based aircraft mix.

Nation's Active General Aviation Fleet

According to the 2022 FAA Aerospace Forecast, the number of active general aviation aircraft in the nation was 204,405 in 2021. The FAA expects this figure to grow to more than 208,900 by 2042. Despite the limited growth, the Aerospace Forecast provides detail on how the individual aircraft categories are expected to evolve during the next 20 years. Additionally, while the FAA provides a number of aircraft categories, they have been simplified into the five major categories shown in **Table 2.12**. Within the single-engine grouping are the single-engine piston, experimental, and light sport aircraft categories. The multi-engine and rotorcraft groups both contain piston and turbine models. It is also assumed that single-engine turboprops are included within the multi-engine group as there is not a separate category for this small segment of the fleet. The jet category covers all ranges of turbojet general aviation aircraft, from very light jets to the heaviest business jets.

As noted previously, the FAA projects considerable growth in the number of jet aircraft in the general aviation fleet. In addition to the aircraft manufacturing and retirement trends, demand for jet aircraft is up as companies increase their use of these through various charter, lease, time-share, partnership, and fractional ownership agreements. More businesses rely on general aviation because it provides safe, efficient, flexible, and reliable transportation. Fractional ownership offers consumers a more efficient use of time by providing faster point-to-point travel, the ability to conduct business while flying, and more convenient enplaning and deplaning of flights when compared to commercial airlines. In fact, during the COVID-19 pandemic, the industry saw an increase in private business travel when commercial airline options were reduced.

TABLE 2.12: FAA FORECAST OF NATIONAL ACTIVE GENERAL AVIATION FLEET

	2021 Fleet Mix	2042 Fleet Mix	Average Annual Growth Rate
Single-Engine	152,870	141,300	-0.4%
Multi-Engine (piston & turboprop)	22,140	22,510	0.1%
Jet	15,755	27,000	2.6%
Rotorcraft	9,820	13,530	1.5%
Other	3,820	4,565	0.0%
Total	**204,405**	**208,905**	

Source: FAA 2022 Aerospace Forecast.

In the FAA's projections, growth in the U.S. Gross Domestic Product and corporate profits were also considered as catalysts to the increase in active jet aircraft. In all, jets are expected to represent 12.9 percent of the active general aviation fleet by 2042, up from 7.7 percent in 2021. Reasons for the decline in the overall number of single-engine piston aircraft and virtually no growth in the multi-engine category is attributed to cost of ownership and new aircraft deliveries not keeping pace with retirements in these aging fleets.

Expected Based Aircraft Fleet Mix

The 2022 based aircraft fleet mix at VRB is comprised of 73.0 percent single-engine, 17.4 percent multi-engine, 7.7 percent jet, and 1.9 percent rotorcraft. Throughout the planning period, the mix of based aircraft is expected to remain predominately single-engine, but those will account for a slightly lower overall percentage of the total. Following the FAA's expectation for the nation's active general aviation fleet, an increase in the number of based jets as well as some turboprop aircraft is expected during the next 20 years. This is reasonable considering that turbojet technology has developed to the point that it is truly feasible as a replacement to the more traditional piston powered fleet. The expected future based aircraft fleet mix is included in **Table 2.13**.

TABLE 2.13: PROJECTED BASED AIRCRAFT FLEET MIX

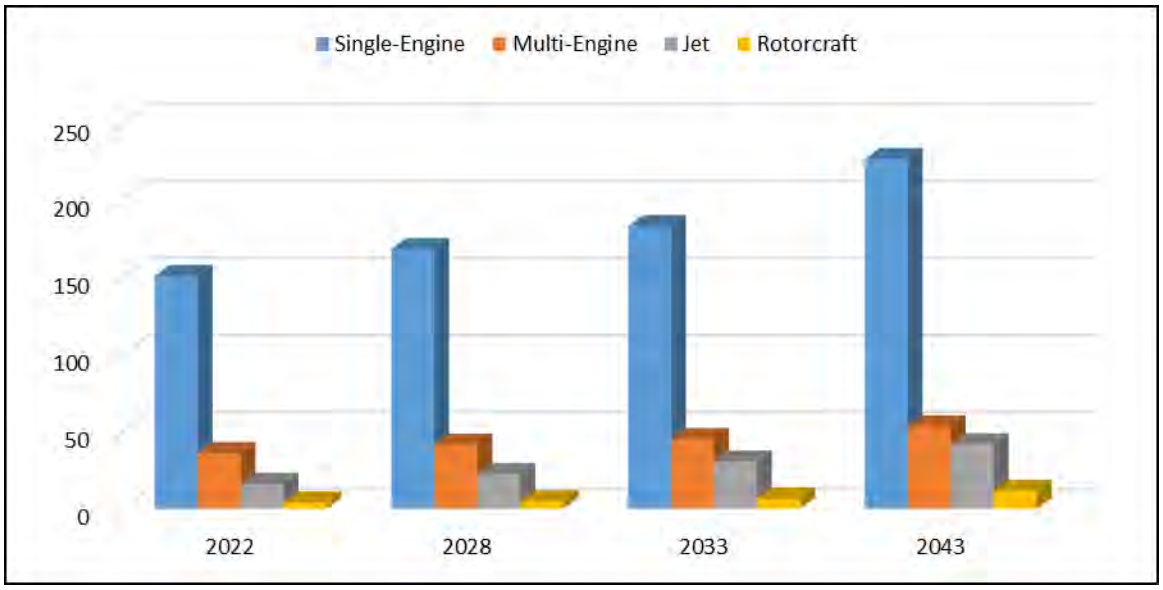
	Base Year	Forecast Year		
	2022	2028	2033	2043
Single-Engine	151	167	183	227
Multi-Engine (piston & turboprop)	36	42	45	53
Jet	16	23	31	42
Rotorcraft	4	5	7	12
Total	**207**	**237**	**266**	**334**

Source: 2022 VRB Hangar Waiting List, FAA 2022 Aerospace Forecast, and ESA Analysis, 2023.

As with most airports, the single-engine category is predominantly comprised of Beechcraft, Cessna, Cirrus, Mooney, and Piper models. Multi-engine aircraft tend to include the Cessna 300 and 400 series models and Piper aircraft including the Navajo, Seminole, and Seneca series. The additional single-engine aircraft are expected to

be similar to those currently at VRB, while those in the multi-engine category will continue to include a mix of the piston models for training and turboprops for private or business use.

FIGURE 2.4: PROJECTED BASED AIRCRAFT FLEET MIX



Source: ESA Analysis, 2023.

Based jets will continue to include a range of the aircraft flying today. These include popular models from the Bombardier Challenger, Bombardier Learjet, Cessna Citation, Dassault Falcon, and Embraer families. Rotorcraft will continue to include both piston and turbine powered models, including the Eurocopter and Schweitzer currently based at VRB and other popular models including those from Bell and Robinson in the future.

2.5. Aircraft Operations

The FAA defines an aircraft operation as either a single aircraft landing or takeoff. Further, a touch and go procedure is counted as two operations, since the aircraft lands and immediately takes off. Aircraft operations are classified by the FAA into the following categories:

- Air Carrier - an aircraft with seating capacity of more than 60 seats or a maximum payload capacity of more than 18,000 pounds carrying passengers or cargo for hire or compensation.
- Air Taxi - an aircraft designed to have a maximum seating capacity of 60 seats or less or a maximum payload capacity of 18,000 pounds or less carrying passengers or cargo for hire or compensation.
- General Aviation - all civil aircraft, except those classified as air carriers or air taxis.
- Military - all classes of military aircraft.

The ATCT at VRB operates 14 hours a day from 7 a.m. to 9 p.m. Operations conducted during ATCT hours are officially recorded in the FAA's Operations Network (OPSNET) database. **Table 2.14** summarizes the Airport's annual operations recorded by the ATCT over the last 10 years. While it only goes back to 2013, the figures for 2019, prior to the COVID-19 pandemic, represents the highest level of annual operations ever for VRB. Additionally, it should be noted that aircraft operations do occur when the tower is closed; however, the Airport has a voluntary noise abatement program for both flight training activity and jet operations.

TABLE 2.14: HISTORIC ANNUAL OPERATIONS

Fiscal Year	Annual Operations	Percent change over prior year
2013	185,699	-
2014	211,200	13.7%
2015	217,227	2.9%
2016	207,923	-4.3%
2017	205,958	-0.9%
2018	226,534	10.0%
2019	253,339	11.8%
2020	189,347	-25.3%
2021	123,306	-34.9%
2022	133,802	8.5%

Source: FAA OPSNET Database.

Prior to 2017, there were very few air carrier operations recorded at the airport. The commercial passenger flights conducted by Elite Airways between 2017 and 2022 were documented as air carrier operations, even though only a few of the aircraft in their fleet had more than 60 seats. This is not uncommon for most commercial service airports as the air taxi category is typically associated with general aviation air charter, lease, time-share, partnership, and fractional ownership operations.

Projections of Annual Operations

While VRB supported commercial airline service and military activity, during the last 10 years, their combined activity peaked at 478 annual operations in 2021. Therefore, the forecast of annual operations have been analyzed as a whole, with a breakout of the expected commercial air carrier activity provided in a separate section.

Historic Growth

Historic activity is important to evaluate given the cyclical nature of the aviation industry. As shown previously in **Table 2.14**, every two years the annual operations at VRB have fluctuated between increases and decreases. The most significant of which were the losses experienced in 2020 and 2021 due to the COVID-19 pandemic. While the Airport's activity increased 8.5 percent in 2022, the annual operations are still well below pre-COVID-19 pandemic levels. In fact, so much activity was lost that 2022 is below the 2013 level. This results in an overall average annual loss for the last 10 years; therefore, the historic data was not utilized to create a future projection of annual operations for VRB.

Previous Projections

Operations in the 2016 Airport Layout Plan Update were projected to have an average annual growth rate of 1.5 percent through 2033. When applied to the operations count for 2022, the result was a projection of nearly 183,000 annual operations by 2043 (see **Table 2.15**).

While the FASP typically benefits from being updated on a regular basis, the most recent projection of annual operations for VRB utilized 2016 as a base year. Created prior to the fluctuations in activity between 2016 and 2022, FDOT projected the Airport's activity to grow at an average rate of 1.3 percent each year. If applied to the level of activity for 2022, the FASP growth rate yields a forecast just under 175,500 annual operations by 2043 (see **Table 2.15**).

The projection of operations in the 2022 TAF utilize 2021 as the base level of activity with an average annual growth rate of 3.6 percent through 2043. When that growth is applied to the base year, it yields a forecast more than 283,000 annual operations by 2043 (see **Table 2.15**).

Utilization of the General Aviation Fleet

Each year as part of their Aerospace Forecast, the FAA provides historic data and projections on the number of hours flown by general aviation aircraft. As noted previously, in the 2022 Aerospace Forecast the FAA anticipates the general aviation fleet utilization to increase at an average annual rate of 1.1 percent between 2021 and 2042. Under the general assumption that there would be an equal distribution across the nation for general aviation operations, this rate was applied to generate an alternate forecast for the airport. When the overall utilization rate is applied to the base year operations for VRB, it results in a projection of more than 168,000 annual operations by the end of the planning period (see **Table 2.15**).

Market Share

A common methodology for forecasting aviation activity is the use of market share analysis. This approach allows a comparison to be made of the annual operations VRB has supported against a defined data set. In the 2022 Aerospace Forecast, the FAA documents the operations conducted at all of the nation's towered airports between 2010 and 2021 and projects those operations out to 2042. Their data includes a separate breakout for general aviation. **Figure 2.1** depicted the historic fluctuations in the nation's general aviation operations and despite the increase after 2020, shows that the counts for 2021 were only slightly higher than 2010. As noted, annual operations at VRB during the last 10 years have had similar year to year variations, and just like the nation, have not fully recovered to pre-COVID-19 pandemic levels.

Prior to the pandemic, the operations at VRB were contributing an increasing share of the overall general aviation activity by the nation's towered airports. Throughout this period, including the pandemic, the general aviation

activity for Florida's towered airports increased its share of the nation's towered airports (from 14.4 to 17.1 percent) as one of the leading states in post-COVID-19 recovery.

It is assumed VRB will re-establish an increasing share of the nation's general aviation activity during the 20-year planning period of this study. When the expected local market share is combined with the FAA's projected increase in general aviation activity, nearly 244,000 operations (see **Table 2.15**) would be supported at VRB by 2043.

Regression Analysis

A variety of regression models were evaluated using the different independent variables against the historic operations data. However, no significant correlations could be derived using different combinations of the independent variables used in both simple and multiple regression analyses. Essentially, none of the local socioeconomic or industry data available would generate a model that could reliably explain the historic activity. This is primarily attributed to the fact that the historic number of operations at VRB have increased and decreased every two years while most of the independent variables utilized had positive, linear growth during the same period. Additionally, it is assumed the local socioeconomic data has less of an influence on aircraft operations given the level of flight training at VRB, which brings students from outside the community. Therefore, this method was not included.

Recommended Forecast of Annual Operations

Each of the projections shown in **Table 2.15** were generated using commonly accepted methods. Therefore, selection of a preferred forecast largely depends on the potential of the Airport's users and the associated assumptions on future airport activity. In addition, the selection of a preferred forecast also needs to consider the airport improvements that have been made and that will be made in the future (unconstrained scenario). Finally, no future projection should be selected if it does not realistically account for past and future changes in the aviation industry.

TABLE 2.15: COMPARISON OF ANNUAL OPERATIONS PROJECTIONS

	2016 ALPU[a]	FASP[a]	2022 TAF Growth[a]	Utilization of National Fleet	Market Share Analysis
Base Year					
2022	133,802	133,802	133,802	133,802	133,802
Forecast					
2028	146,305	144,584	165,782	142,879	158,838
2033	157,612	154,229	198,198	150,913	183,245
2043	182,915	175,493	283,286	168,359	243,885
Average Annual Change (2022-2043)	**1.5%**	**1.3%**	**3.6%**	**1.1%**	**2.9%**

[a] Applies growth projection of previous study to current base year of operations.

Source: ESA Analysis, 2023.

Before the COVID-19 pandemic, general aviation operations at the nation's towered airports between 2010 and 2019 only increased an average of 0.3 percent each year. Activity for Florida's towered airports over the same

period had an average annual increase of 3.3 percent and for VRB the average annual growth was 5.3 percent. If 2020 and 2021 are taken into consideration, the national figures show an average increase of 0.2 percent each year and Florida with an average of 1.4 percent. Conversely, for VRB this period had an average annual decrease of 2.3 percent. This highlights the COVID-19 pandemic impacts to operations at VRB which resulted in the 25.3 percent loss from 2019 to 2020 and a 34.9 percent loss from 2020 to 2021 as shown previously in **Table 2.14**.

Despite this, the Airport has the ability to fully recover and is expected to do so within the first half of the 20-year forecast horizon. Between 2021 and 2022, annual operations at VRB increased 8.5 percent. Perhaps more noteworthy is during the first quarter of 2023, operations were up 57.7 percent over the same quarter in 2022. Given that the first quarter has not historically been the busiest for the Airport, if similar growth continues, it is reasonable to assume VRB will eclipse 200,000 annual operations within 5 years. This is supported by the fact that Paris Air and Skyborne Airline Academy have a high utilization rate for the approximate 50 some training aircraft operated by each. In 2019, the airport recorded its highest level of operations. A majority of the 253,339 operations conducted prior to the pandemic were attributed to the significant flight training that has always occurred at VRB.

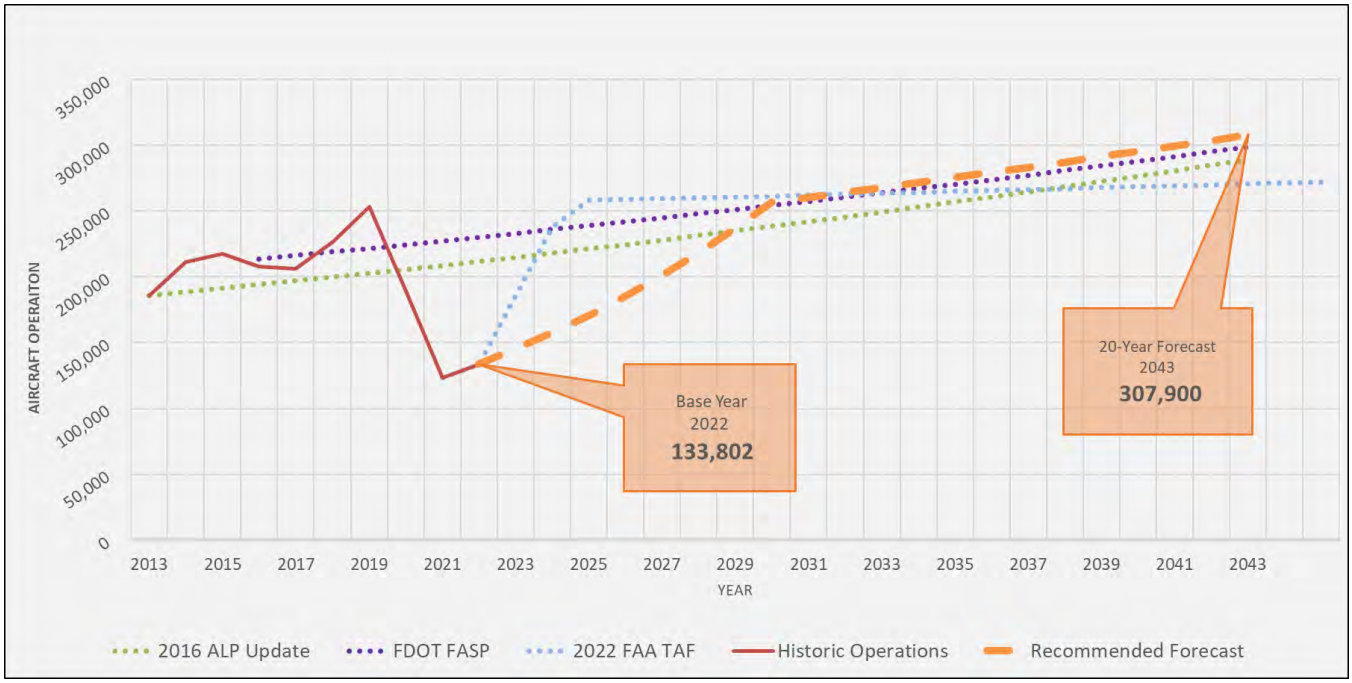
Given the above, different growth rates were applied to derive the recommended forecast of annual operations. Initially the recent 8.5 percent growth was applied each year through 2030. This results in a forecast where the Airport would more conservatively surpass 200,000 annual operations within five years and finally re-realize the highest level of activity recorded in 2019 within eight years. After 2030, it is believed the average annual growth will subside significantly, even under an unconstrained scenario. The average annual growth after 2030 is expected to be similar to the growth projected by the previous local and state projections which averaged 1.4 percent each year. **Table 2.16** reflects the recommended annual operations forecasts with the final values rounded to the nearest hundred. With the different short- and long-term growth rates applied, the recommended forecast has an overall average annual change of 4.0 percent

TABLE 2.16: FORECAST OF ANNUAL OPERATIONS

	Recommended Forecast
Base Year	
2022	133,802
Forecast	
2028	218,300
2033	267,900
2043	307,900
Average Annual Change (2022-2043)	4.0%

Source: ESA Analysis, 2023.

FIGURE 2.5: COMPARISON OF RECOMMENDED ANNUAL OPERATIONS FORECAST TO PREVIOUS PROJECTIONS



Source: Previous Forecasts and ESA Analysis.

2.6. Passenger Service Forecasts

Between 2017 and 2022, Elite Airways offered passenger service between VRB and Newark Liberty International Airport (EWR), Portland International Jetport (PWM), Westchester County Airport (HPN), and New Bedford Regional Airport (EWB). These flights were conducted primarily using Elite Airways' fleet of the 50 seat Bombardier CRJ-100 and 70 seat CRJ-700 series aircraft. Elite Airways discontinued service at the Airport in 2022.

On February 2, 2023, Breeze Airways initiated their inaugural service creating new regularly scheduled passenger service for the surrounding community. The following sections evaluate the airline's initial schedule along with established industry trends to estimate the potential passenger service that could occur during the 20-year planning horizon. This includes estimates of the annual passenger enplanements and the number of commercial service aircraft operations. Enplanements, or the number of passengers departing an airport, are the most common measure used by the FAA to gauge passenger activity.

The inaugural service by Breeze Airways includes flights from VRB to Bradley International Airport (BDL) and Westchester County Airport (HPN). These flights are operated as mainline service since they are conducted using the airline's 118 seat Embraer ERJ-195 and 126 seat Airbus 220-300 aircraft and do not feed any other carrier networks. For the purposes of forecasting future passenger service, the trends and outlook associated with both mainline and regional carriers were considered.

Passenger Service Operations

Typically for passenger service forecasts, annual enplanements are evaluated first. This helps to determine how an airport's airline(s) might react to meet the passenger demand expected. For VRB the historic enplanement data between 2017 and 2022 is sporadic, ending with 1,948 total passenger enplanements in 2022.

It is worth noting that prior to 2023, VRB was limited to 60 passengers per flight due to security requirements. This is no longer a constraint as the current security program allows for Breeze to operate their 118 and 126 seat aircraft at full capacity. Additionally, **Table 2.17** provides an overview of the passenger service options provided by the three commercial service airports which serve the Vero Beach and Indian River County communities. As noted before, Breeze is a low cost carrier providing non-stop flights to secondary airports in underserved areas. So while the other commercial service airports will continue to provide service to the communities, the niche market being served by Breeze certainly has potential for growth.

At the time these forecasts were prepared, only the initial seven month schedule from Breeze Airways was available; providing detail on the flights offered between February and the end of the fiscal year. In all a total of 208 departures are scheduled for 2023, which will generate 416 air carrier operations. The flights in the initial seven month schedule are evenly split between the two city pairs with the Embraer ERJ-195 serving the Westchester County Airport route and the Airbus 220-300 dedicated to the Bradley International Airport market. The schedule was pro-rated to estimate the number of flights for the airline's first full year of operation between October 2023 and September 2024 (to align with the other fiscal year data used in this study). This resulted in 356 departures or 712 air carrier operations for 2024 (see **Table 2.18**). Beyond 2024 it is difficult to estimate the level of commercial passenger service that can be sustained at VRB. Not only is there a lack of historic data; the flights and frequency offered by Breeze Airways are different from those provided in the past and unfortunately no projections were shared by the airline. Therefore, industry trends and predictions from the 2022 FAA Aerospace Forecast were utilized.

TABLE 2.17: OTHER NEIGHBORING PASSENGER SERVICE OPTIONS

Airport	Distance and Approximate Travel time from VRB	Number of Airlines	Destinations
Melbourne-Orlando International (MLB)	42 miles Approx. 55 minutes	6 airlines	Numerous Domestic and International Routes
Palm Beach International Airport (PBI)	82 miles Approx. 80 minutes	13 airlines	Numerous Domestic and International Routes
Orlando International Airport (MCO)	98 miles Approx. 90 minutes	38 airlines	Numerous Domestic and International Routes

Source: ESA Analysis, 2023.

Overall the FAA projects domestic passenger enplanements to continue to recover, with the expectation to reach pre-COVID-19 levels by the end of 2023. Beyond 2023 the Aerospace Forecast project domestic mainline enplanements to average 2.5 percent growth each year through 2042 (regionals are expected to increase 2.7 percent each year). As noted previously, the 2022 FAA Aerospace Forecast also documents and projects the operations conducted at the nation's towered airports. For towered airports, air carrier operations between 2023 and 2042 are also expected to increase 2.5 percent each year. Therefore, an average annual growth of 2.5 percent was applied to estimate the level of air carrier operations at VRB beyond 2024 (see **Table 2.18**).

TABLE 2.18: ESTIMATE OF AIR CARRIER OPERATIONS

	Air Carrier Operations
Base Year	
2022	56
Forecast	
2023[a]	416
2024[b]	712
2028	786
2033	889
2043	1,138
Average Annual Change (2024-2043)	2.5%

[a] Based on Breeze Airways' initial 7 month schedule.

[b] Expected operations for Breeze Airways' first full year.

Source: ESA Analysis, 2023.

Due to the evolving passenger service market at VRB under the new airline offerings, high- and low-growth scenarios were also created for the potential air carrier operations. The high-growth scenario is simply a doubling of the estimated 2.5 percent annual growth rate. There are many possibilities that could increase the level of commercial service activity. These include adding frequency to the existing market pairs, adding new destinations, or additional service by another airline. For the low-growth scenario, it was assumed that the demand for additional air carrier operations could be limited by the area's population. Therefore, the projected 1.2 percent average annual growth for Indian River County's population over the 20-year planning horizon was applied. **Table 2.19** includes the high- and low- growth scenarios, which along with the expected air carrier operations included previously **Table 2.18**, will be utilized to develop planning activity levels for certain facility requirements in the following chapter.

TABLE 2.19: HIGH- AND LOW-GROWTH SCENARIOS FOR AIR CARRIER OPERATIONS

	High-Growth Scenario	Low-Growth Scenario
Base Year		
2022	56	56
Forecast		
2028	865	747
2033	1,105	793
2043	1,799	893
Average Annual Change (2024-2043)	5.0%	1.2%

Source: ESA Analysis, 2023.

Passenger Enplanements

Enplanements are the number of passengers departing an airport; therefore, only half of the air carrier operations expected are utilized to estimate the level of passenger enplanements. The other key variables are the number of seats available on the aircraft providing the service and the anticipated aircraft load factor.

As with the air carrier operations, it is difficult to estimate the number of passenger enplanements given the lack of historic data and uncertainty of the current market, not to mention the variability in the types of aircraft and potential load factors that might occur. As such, a simplistic approach was taken with respect to the size of aircraft expected to serve the market. As noted previously, the initial schedule from Breeze Airways utilizes the 118 seat Embraer ERJ-195 on the Westchester County Airport route and the 126 seat Airbus 220-300 on the Bradley International Airport market. For the purposes of estimating the potential levels of passenger enplanements it was assumed these two aircraft and the even split between them would remain throughout the planning period. It should be noted that such an assumption could easily change at any point in the 20-year planning horizon.

For the average load factor, recent industry trends were applied. Prior to the COVID-19 pandemic, the average load factor for mainline and regional carriers combined reached a high of 85.2 percent in 2019. This average decreased below 69 percent in 2020 and was barely above 72 percent in 2021. The 2022 FAA Aerospace Forecast do not project the pre-COVID-19 level to be re-established for at least 15 years. After this period, the mainline recovery is higher at an average load factor 85.8 in the long-term while regional carriers are expected to

remain below 80 percent. In order to calculate the potential level of passenger enplanements for VRB, the more conservative 80 percent average load factor was applied across the board. Interestingly enough, an article in January 2023 documented that since its launch in May 2021, Breeze Airways has served 1.6 million passengers and after a slow start, currently has a systemwide load factor of 80 percent. **Table 2.20** provides the estimated level of passenger enplanements for 2023 and 2024.

TABLE 2.20: ESTIMATE OF INITIAL ANNUAL PASSENGER ENPLANEMENTS

Year	Aircraft	Annual Departures	Number of Seats	Average Load Factor	Annual Enplanements
2023	Embraer ERJ-195	104	118	80%	9,802
	Airbus 220-300	104	126	80%	10,466
				Total	**20,268**
2024	Embraer ERJ-195	178	118	80%	16,803
	Airbus 220-300	178	126	80%	17,942
				Total	**34,746**

Source: FAA 2022 Aerospace Forecast, and ESA Analysis, 2023.

Applying the same aircraft and load factor assumptions, **Table 2.21** provides the passenger enplanements calculated for the expected air carrier operations, as well as for the high- and low-growth scenarios. These figures have been rounded to the nearest hundred. Additionally, as with the operations, these projections will be utilized to develop planning activity levels for certain facility requirements in the following chapter.

TABLE 2.21: ANNUAL PASSENGER ENPLANEMENT PROJECTIONS

	Estimated Passenger Enplanements	High-Growth Scenario	Low-Growth Scenario
Base Year			
2022	1,948	1,948	1,948
Forecast			
2028	38,400	42,200	36,500
2033	43,400	53,900	38,700
2043	55,500	87,800	43,600

Source: ESA Analysis, 2023.

It should be noted that the passenger enplanements anticipated are only a starting point to facilitate the planning of facilities to accommodate forecasted demand. As the airline service at VRB matures and additional data becomes available, it will be necessary to revise the passenger enplanement projections along with the air carrier aircraft operations and the related requirements.

2.7. Categories of Aircraft Operations

The following sections present different categories or types of activity that will make up the forecasted operations. This includes a break out of the local, itinerant, and instrument operations, as well as estimating activity peaks and the operational aircraft fleet mix.

Local Versus Itinerant Operations

The FAA categorizes aircraft operations as either local or itinerant. Local operations are those arrivals or departures performed by aircraft that remain in the airport traffic pattern or are within sight of the ATCT. Local operations are most often associated with training activity and flight instruction. Itinerant operations are arrivals or departures other than local operations.

In 2013 the split between operations was 56 percent local and 44 percent itinerant. Between 2013 and 2019 when activity peaked, there was an increase in the number of itinerant operations which resulted in 46 percent local and 54 percent itinerant split. This trend continued through the COVID-19 pandemic to the 2022 split of 39 percent local and 61 percent itinerant. The continued shift towards more itinerant after 2019 was attributed to the decrease in flight training and an increased utilization of general aviation for personal and business travel.

Over the next five years it is anticipated that the local share of operations will return to pre-COVID-19 levels, generating around 45 percent of the operations. Despite this shift, the number of itinerant operations will still increase given the overall growth in activity expected for VRB. This split is expected to remain through the first half of the planning period. After, it is anticipated that the share of local operations will account for half of the activity by the end of the 20-year planning horizon (see **Table 2.22**), bringing the levels back to the 50/50 split averaged over the last 10 years.

TABLE 2.22: FORECAST OF LOCAL VERSUS ITINERANT OPERATIONS

	Local		Itinerant		Total
Base Year					
2022	52,340	39%	81,462	61%	133,802
Forecast					
2028	98,200	45%	120,100	55%	218,300
2033	120,600	45%	147,300	55%	267,900
2043	153,950	50%	153,950	50%	307,900

Source: FAA OPSNET Records and ESA Analysis, 2023.

Instrument Operations

A separate estimate of instrument operations conducted at VRB is important when evaluating future facility requirements. The OPSNET data includes the number of instrument flight rule (IFR) operations conducted. Over the past 10 years these instrument operations have averaged 15 percent of the total, with the highest level at nearly 23 percent in 2021. In fact, instrument activity has averaged 20 percent through the COVID-19 pandemic (2019 to 2022).

The more recent average of 20 percent has been utilized to the estimate the number of instrument operations expected in the future. While higher than the historic average, this is considered to better represent the current trends of additional business/corporate aviation as well as the fact that even the smallest general aviation aircraft have sophisticated instrument capability and conduct more IFR operations than in the past. The number of instrument operations expected are included in **Table 2.23**.

TABLE 2.23: ESTIMATE OF INSTRUMENT OPERATIONS

	Instrument Operations
Base Year	
2022	28,775
Forecast	
2028	43,700
2033	53,600
2043	61,600

Source: FAA OPSNET Records and ESA Analysis, 2023.

It should be noted that the estimate of instrument operations is different from the actual percentage of the year that the airport experiences IFR conditions. Unlike the weather observations, the count and subsequent estimate of instrument operations include those conducted during actual instrument meteorological conditions as well as the ones simply under an IFR flight plan.

Peak Activity Projections

Annual projections provide a good overview of the activity at an airport but may not reflect certain operational characteristics of the facility. In many cases, facility requirements are not driven by annual demand, but rather by capacity shortfalls and delays experienced during peak times. Therefore, estimates of the peak month, the average day in the peak month, and the peak hour demand for aircraft operations are needed.

Review of the monthly operational data for the last 10 years reveals that operations have peaked in different months. While many have occurred in March; May and August have both occurred more than once as a peak month. In 2020, January was the peak month since activity dropped significantly that year when the COVID-19 pandemic shut things down in mid-March. However, the following year March was again the peak month even though the overall level of operations were down. Regardless, the peak months during the last 10 years all had similar percentages with respect to the overall annual operations. On average the peak months generated 10.3 percent of the annual operations, which for planning purposes was rounded up to 11 percent and applied to each of the future forecast years.

For the average number of days in the peak month, 31 was applied since as expected, all of the historic peak months occurred in a month with 31 days. No historic data was available to determine the peak hour operations. The typical averages in the industry range between 10 and 15 percent of the peak month average day. Given the level of flight training at VRB and that multiple aircraft have been observed queued along the taxiways waiting to depart; the higher 15 percent was applied to estimate peak hour operations for VRB. With the exception of the peak hour, the resulting estimates in **Table 2.24** have been rounded to the nearest 10 for the forecast years.

TABLE 2.24: PEAKS IN TOTAL AIRCRAFT OPERATIONS

	Total Annual Operations	Peak Month	Average Day of Peak Month	Peak Hour of Average Day
Base Year				
2022	133,802	13,967	451	68
Forecast				
2028	218,300	24,010	770	116
2033	267,900	29,470	950	143
2043	307,900	33,870	1,090	164

Source: FAA OPSNET Records and ESA Analysis, 2023.

Operational Fleet Mix

Operational fleet mix is an important factor in determining the needs for airfield improvements. However, even at airports with an ATCT, it is difficult to estimate the type of aircraft conducting operations since this information is not typically recorded by the tower. Instead, the current operational fleet mix percentages were based on information contained in FlightAware operational data obtained for VRB. In 2022 the operational fleet mix comprised of 70.6 percent single-engine, 9.2 percent multi-engine, 18.8 percent jet, and 1.4 percent rotorcraft. The level of annual operations for each category are included in **Table 2.25**.

TABLE 2.25: PROJECTED OPERATIONAL FLEET MIX

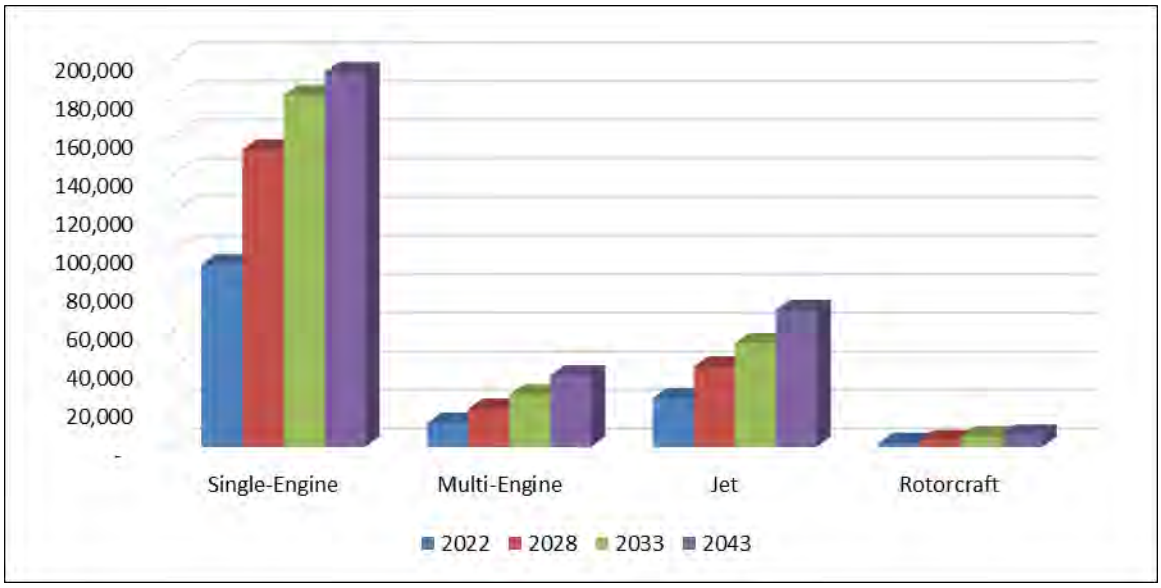
	Base Year	Forecast		
	2022	2028	2033	2043
Single-Engine	94,464	153,900	182,100	194,000
Multi-Engine (piston & turboprop)	12,310	19,600	26,800	36,900
Jet	25,155	41,500	53,600	70,800
Rotorcraft	1,873	3,300	5,400	6,200
Total	**133,802**	**218,300**	**267,900**	**307,900**

Source: 2022 FlightAware Data, FAA 2022 Aerospace Forecast, and ESA Analysis, 2023.

Information from the 2022 FAA Aerospace Forecast as well as that obtained during the inventory process and discussions with airport management was utilized to predict how the operational fleet mix would change during the next 20 years. The FAA anticipates growth and increased utilization for every aircraft category with the exception of the single-engine piston and multi-engine piston types. As described previously, the most significant growth and utilization is expected to occur in the jet and rotorcraft categories. Regardless, as shown previously in **Table 2.25**, activity by single- and multi-engine aircraft at VRB is expected to increase given the large number of these aircraft at the Airport and in Florida overall.

General aviation jet activity at VRB will continue to include nearly every type of business jet aircraft flying. In the light to medium-sized class (maximum allowable takeoff weight between 10,000 and 60,000 pounds) this includes the Embraer Phenom and Legacy, Beechcraft Hawker, Bombardier Learjet, Cessna Citation, and Dassault Falcon type jet aircraft. For the larger and heavier business jet fleet over 60,000 pounds, typical examples include the Bombardier Global, larger Dassault Falcon, and Gulfstream series aircraft.

FIGURE 2.6: PROJECTED OPERATIONAL FLEET MIX



Source: ESA Analysis, 2023.

2.8. Critical Aircraft

The airport planning criteria and design standards for various airfield elements are based on the critical design aircraft that make regular use of the airport. Regular use is defined as 500 annual operations, including both itinerant and local operations, but excluding touch and go operations. These aircraft classify airport facilities based on Approach Reference Codes (APRC), Departure Reference Codes (DPRC), Runway Design Codes (RDC), and Taxiway Design Groups defined in FAA Advisory Circular (AC) 150/5300-13B, Airport Design.

Runway Reference and Design Codes

Approach and departure codes identify the current operational capabilities for each runway with a parallel taxiway, where no special procedures are required for landing or takeoff operations. As such, runways can have more than one APRC or DPRC code for different aircraft groups and these codes may change as airfield improvements are made. In practice, the APRC defines the largest aircraft group (under a set visibility condition) that can land on a runway while an aircraft in the same group is operating simultaneously on the parallel taxiway. The DPRC defines the largest aircraft group that can depart a runway under any conditions and with any sized aircraft on the parallel taxiway. While the APRC and DPRC designations identify existing operational limitations for each runway, the RDC is utilized to plan future runway requirements.

TABLE 2.26: RUNWAY REFERENCE AND DESIGN CODE COMPONENTS

Aircraft Approach Categories		
Category	Approach Speed	
A	Less the 91 Knots	
B	91 knots or more but less than 121 knots	
C	121 knots or more but less than 141 knots	
D	141 knots or more but less than 166 knots	
E	166 knots or more	
Aircraft Approach Categories		
Group	Tail Height (feet)	Wingspan
I	< 20	< 49
II	20 ≤ 30	49 ≤ 79
III	30 ≤ 45	79 ≤ 118
IV	45 ≤ 60	118 ≤ 171
V	60 ≤ 66	171 ≤ 214
VI	66 ≤ 80	214 ≤ 262
Visibility Minimums		
Runway Visual Range (feet)	Instrument Flight Visibility Category (statute mile)	
5000	Not lower than 1 mile	
4000	Lower than 1 mile but not lower than 3/4 mile	
2400	Lower than 3/4 mile but not lower than 1/2 mile	
1600	Lower than 1/2 mile but not lower than 1/4 mile	
1200	Lower than 1/4 mile	
VIS	Visual	

Source: FAA Advisory Circular 150/5300-13B, Airport Design.

For all three codes, the first component is the Aircraft Approach Category which is depicted by a letter and relates to the aircraft's landing approach speed (operational characteristic). The second component is the Airplane Design Group (ADG) which uses Roman numerals to identify the critical aircraft wingspan or tail height (physical characteristics). For APRC and RDC, a third component relates to the visibility minimums associated with the runway, or group of runways, expressed in the Runway Visual Range (RVR) values. For runways with only existing and future visual approaches, the third component should be "VIS" in lieu of visibility minimums. The ranges for these three components are reflected in **Table 2.26** on the previous page.

Runway 12R-30L

The 2016 Airport Layout Plan Update established the Bombardier Global Express 5000 (C-III) as the representative critical aircraft for Runway 12R-30L. This was based on a grouping of C-III aircraft having conducted approximately 580 annual operations in 2013. For 2022, a review of the FlightAware data for VRB documented that 338 annual operations of C-III and D-III aircraft combined were conducted. These consisted of 282 operations by general aviation jets and 56 by Elite Airways (see **Table 2.27**). Operations conducted by these aircraft were down from prior years given the significant drop in activity in 2020 and 2021, as well as the discontinuance of service by Elite Airways in 2022.

TABLE 2.27: OPERATIONS BY C-III AND D-III AIRCRAFT

	Total Jet Operations	General Aviation	Commercial Service	Total C-III and D-III	Percent of Total Jets
Base Year					
2022	25,155	282	56	338	1.3%
Forecast					
2023[a]	27,300	296	416	712	2.6%
2024[a]	29,700	311	712	1,023	3.4%
2028	41,500	379	786	1,165	2.8%
2033	53,600	485	889	1,375	2.6%
2043	70,800	794	1,138	1,932	2.7%

[a] Included to show impact Breeze Airways' inaugural service (7 months in 2023) and first full year (2024) will have on C/D-III operations.

Source: 2022 FlightAware Data, 2023 Breeze Airways schedule, and ESA Analysis, 2023.

Previous sections, have documented that overall operations at VRB are on a rebound and that the activity generated by general aviation jets will have the largest growth. To project the future general aviation C-III and D-III operations, the same growth in jet activity from the operational fleet mix projections was applied (see previous **Table 2.25**). In addition, the commercial service operations expected by Breeze Airways is also included in the estimate since the aircraft they are using (Embraer ERJ-195 and Airbus 220-300) are C-III aircraft. As shown, the C-III and D-III aircraft will exceed 500 annual operations in 2023.

While technically Runway 12R-30L did not meet the criteria to retain C-III as the critical aircraft in 2022; this was temporary. Even though 2022 is considered the base year, this study was largely conducted in 2023; therefore, it is fully expected, due to the current commercial service by Breeze Airways for the C-III and D-III aircraft to exceed 500 annual operations before the master plan is complete. For this reason, the current critical aircraft should remain C-III for Runway 12R-30L with the Airbus 220-300 becoming the representative aircraft. The Airbus 220-

300 has a wider wingspan, longer length, taller tail height, and heavier maximum allowable takeoff weight than the Bombardier Global Express 5000 or the Embraer ERJ-195.

For the future, the critical aircraft is expected to be D-III with the Gulfstream G650 selected as the representative aircraft. In 2022 there were 146 annual operations by D-III aircraft, most of which were conducted by Gulfstream G500 and G600 aircraft. The Gulfstream G650 characterizes the larger business jet aircraft being manufactured today and that will continue to increase activity at VRB as projected in the recommended forecast. In fact, some of the newest business jets currently being manufactured are physically larger than the Gulfstream G650 in both wingspan and tail height, but still within the D-III category. These include the newer Bombardier Global 7500/8000s and the Gulfstream 700/800 series.

Unless the current instrument minimums established to either end of Runway 12R-30L change (addressed in the facility requirements chapter and evaluated in the alternatives chapter), the existing and future RDC for Runway 12R-30L is C-III-4000 and D-III-4000, respectively. When combined with the existing visibility minimums and the minimum 400 foot centerline offset of parallel Taxiway C, the existing and future APRCs for the Runway 12R-30L are D-IV-4000 and D-V-4000. Similarly, the 400 foot offset of Taxiway C results in DPRCs of D-IV and D-V for the existing and future runway.

Runway 4-22

A crosswind runway is recommended by the FAA when the primary runway orientation cannot provide 95 percent wind coverage. The wind analysis in the previous chapter documented that during all-weather and visual flight rules conditions, a crosswind runway is needed for the 10.5 knot category (A-I and B-I aircraft). During IFR conditions a crosswind runway is needed for the 13 knot category (A-II and B-II aircraft). However, with an overall length of 4,974 feet, Runway 4-22 is capable of supporting a large portion of the general aviation fleet, including a majority of the upper mid-size business jets. In fact, jets with the runway design components of C-II and D-II utilized the crosswind runway on a regular basis. Based on the 2022 FlightAware data, this grouping of aircraft for VRB included the Bombardier Challenger 350, 601, and Lear 75 (C-II); Embraer Legacy 450 and 500 (C-II); Cessna Citation III, VI, and VII series (C-II); Gulfstream G150 and G200 (C-II); and Gulfstream IV and 450 (D-II) aircraft.

For both the existing and future conditions, the Gulfstream G450 (D-II) has been selected as the representative critical aircraft for Runway 4-22. Not only are aircraft with similar characteristics expected to continue to conduct more than 500 annual operations on the runway, the Gulfstream G450 is also representative of the type of upper mid-size business jets being manufactured in the foreseeable future. Finally, unless the current instrument minimums established to either end of Runway 14-32 change, the RDC for the runway is D-II-4000. When combined with the lowest visibility minimums on the runway (7/8 mile to Runway 4) and the minimum 350 foot offset of parallel Taxiway A, the APRC for the Runway 4-22 is B-III-4000 and D-II-4000, while the DPRC is B-III and D-II.

Runway 12L-30R

With an overall length of 3,504 feet, Runway 12L-30R can support many of the single-engine and light multi-engine general aviation fleet. For both the existing and future conditions, the Beechcraft King Air B200 (B-II) was selected as the representative critical aircraft. The King Air B200 is also known as the Super King Air 200 and the King Air 250. While a numerous King Air F90 and B200 models were documented in the 2022 FlightAware data for VRB, the King Air B200 was selected since its slightly longer overall length puts it in a higher Taxiway Design

Group (addressed in the following section). The King Air B200 and a number of other similar multi-engine aircraft operating at the Airport have a maximum certificated takeoff weight (MTOW) of 12,500 pounds or less. Within the FAA design standards, aircraft with this weight category are designated as Small Aircraft. Unless an instrument approach is established to the runway (addressed in the facility requirements chapter), the future RDC for Runway 12L-30R is B-II-VIS. When the visual approaches are combined with the 240 foot offset of parallel Taxiway F, the APRC for the Runway 12L-30R is B-II-4000 and the DPRC is B-II.

TABLE 2.28: EXISTING AND FUTURE RUNWAY CODES

Runway	Critical Aircraft	Approach Reference Code (APRC)	Departure Reference Code (DPRC)	Runway Design Code (RDC)
12R-30L (existing)	C-III Airbus 220-300	D-IV-4000 D-V-4000	D-IV D-V	C-III-4000
12R-30L (future)	D-III Gulfstream G650	D-IV-4000 D-V-4000	D-IV D-V	D-III-4000
4-22 (existing and future)	D-II Gulfstream G450	B-III-4000 D-II-4000	B-III D-II	D-II-4000
12L-30R (existing and future)	B-II Small Aircraft King Air B200	B-II-4000	B-II	B-II-VIS Small Aircraft

Source: 2022 FlightAware Data and FAA Advisory Circular 150/5300-13B, Airport Design.

Taxiway Design Group

Taxiway design standards utilize a Taxiway Design Group (TDG) which is based on the overall width of the aircraft's main gear as well as the distance between the main gear and the cockpit. The TDG is the primary design factor for taxiway or taxilane width, as well as the required turning radii and edge fillets. The minimum TDGs for both the existing and future runway critical aircraft are shown in **Table 2.29**.

TABLE 2.29: TAXIWAY DESIGN GROUPS

Runway	Existing	Future
12R-30L	3	3
4-22	2	2
12L-30R	2	2

Source: FAA Advisory Circular 150/5300-13B, Airport Design.

2.9. FAA Terminal Area Forecast Comparison

If an airport is included in the FAA TAF, any new forecasts must be reviewed and approved by the agency before they can be applied to further master plan analyses. During this review, the FAA evaluates if the recommended forecasts for based aircraft, aircraft operations, or passenger enplanements differ from the TAF by more than 10 percent in the 5-year and/or 15 percent in the 10-year planning periods.

Regarding the review, the FAA Airport Planning and Programming division published a guidance paper entitled, *Review and Approval of Aviation Forecasts*. This guidance states: "If the forecast is not consistent with the TAF, differences must be resolved if the forecast is to be used in FAA decision-making. This may involve revisions to the airport sponsor's submitted forecasts, adjustments to the TAF, or both. FAA decision-making includes key environmental issues (e.g. purpose and need, air quality, noise, land use), noise compatibility planning (14 CFR Part 150), approval of development on an airport layout plan, and initial financial decisions including issuance of LOI's (*letters of intent*) and calculation of BCA's (*benefit-cost analysis*)."

Table 2.30 compares the recommended forecasts with those in the 2022 TAF. As shown, the recommended based aircraft forecasts are within the FAA's review criteria for consistency with the TAF. However, the recommended annual operations forecast is 16 percent below the 2022 TAF in the 5-year horizon, but is within the criteria for the 10-year horizon. The discrepancy for the activity expected by 2028 is that the TAF includes nearly 39 percent growth in annual operations between 2022 and 2023, followed by 28 percent growth between 2023 and 2024. This alone results in the TAF projecting more activity in 2024 than the recommended 5-year forecast of this study for 2028. With respect to passenger enplanements, it comes as no surprise that the recommended forecast is not at all consistent with the TAF. The 2022 TAF was issued just a few days after Breeze Airways conducted their February 2, 2023 inaugural flight into VRB. In this latest TAF for VRB, the total passenger enplanements are flatlined at 1,107 each year between 2022 and 2050.

TABLE 2.30: COMPARISON OF FORECAST TO 2022 FAA TAF

	Recommended Forecast	2022 FAA TAF	Difference
Based Aircraft			
Base Year (2022)	207	208	-0.5%
5 year (2028)	237	243	-2.4%
10 year (2033)	266	273	-2.6%
Annual Operations			
Base Year (2022)	133,802	133,802	0.0%
5 year (2028)	218,300	260,097	-16.1%
10 year (2033)	267,900	263,504	1.7%
Passenger Enplanements			
Base Year (2022)	1,948	1,107	76%
5 year (2028)	38,400	1,107	3,369%
10 year (2033)	43,400	1,107	3,821%

Source: 2022 FAA Terminal Area Forecast (issued February 2023).

2.10. Aviation Activity Forecast Summary

Table 2.31 presents an overview of the recommended forecasts. The data and methods used to forecast aviation demand for the airport are consistent with those used by the FAA, FDOT, and other airports around the nation. These forecasts are considered to reasonably reflect the activity anticipated at VRB through 2043 given the information available during this study.

TABLE 2.31: SUMMARY OF AVIATION ACTIVITY FORECASTS

	Base Year	Forecast		
	2022	2028	2033	2043
Based Aircraft				
Single-Engine	151	167	183	227
Multi-Engine (piston & turboprop)	36	42	45	53
Jet	16	23	31	42
Rotorcraft	4	5	7	12
Total	**207**	**237**	**266**	**334**
Annual Operations				
Local	52,340	98,200	120,600	153,950
Itinerant	81,462	120,100	147,300	153,950
Total	**133,802**	**218,300**	**267,900**	**307,900**
Air Carrier Operations	56	786	889	1,138
Instrument Operations	28,755	43,700	53,600	61,600
Peaks in Aircraft Operations				
Peak Month	13,967	24,010	29,470	33,870
Average Day Peak Month	451	770	950	1,090
Peak Hour of Average Day	68	116	143	164
Operational Fleet Mix				
Single-Engine	94,464	153,900	182,100	194,000
Multi-Engine (piston & turboprop)	12,310	19,600	26,800	36,900
Jet	25,155	41,500	53,600	70,800
Rotorcraft	1,873	3,300	5,400	6,200
Passenger Enplanements				
Total	1,948	38,400	43,400	55,500

Source: ESA, 2023.

3. Facility Requirements

3.1. Introduction

Facilities at an airport are planned and developed to serve specific aircraft operations forecast over the 20-year planning horizon. These aircraft are defined by the approach (landing) speed, wingspan, and weight through the use of AAC and ADG, as discussed in Section 2.8, and taxiway design group (TDG), as defined in *FAA AC 150/5300-13B: Airport Design*. For runways, the visibility minimums of instrument approaches are also considered, resulting in the runway design code (RDC). The following sections use the FAA design criteria with data from the inventory, including interviews with airport staff, air traffic control, and tenants, and forecast chapters to identify facility improvements at VRB to be assessed further in the alternatives analysis.

In addition, VRB has a Title 14 CFR Part 139 Airport Operating Certificate. Part 139 certification includes annual inspections of the airfield and airport facilities and required documentation by the FAA. Any Part 139 requirements for applicable portions of the airport will be considered in this facility requirements analysis.

The facility requirements analysis begins with the runways because they are the most demanding and critical infrastructure on the airport, followed by airside and landside facilities that facilitate the movement and support services for aircraft.

3.2. Planning Activity Levels

While the aviation forecast summarized in Table 2.3 uses time periods, the level of activity within each period can also be considered as a planning activity level (PAL). This means that whether the activity projected by 2028 occurs in three, five, or eight years, the important element is to have a plan to meet that activity level. Therefore, the 2023 forecast should be considered the short-term PAL, the 2033 forecast the intermediate PAL, and the 2043 the long-term PAL. This results in the projected based aircraft and operations, as shown in **Table 3.1.** Because the commercial passenger service operator has been at VRB for less than one year at the time of this analysis, and while the enplanement levels are in the table below for reference, it recommended that passenger enplanement levels be used rather than PAL for the passenger facility.

TABLE 3.1: SUMMARY OF AVIATION ACTIVITY FORECASTS BY PAL

	Forecast		
	Short-Term PAL	Intermediate-Term PAL	Long-Term PAL
Based Aircraft			
Single-Engine	167	183	227
Multi-Engine (piston & turboprop)	42	45	53
Jet	23	31	42
Rotorcraft	5	7	12
Total	**237**	**266**	**334**
Annual Operations			
Total	**218,300**	**267,900**	**307,900**
Passenger Enplanements			
Total	38,400	43,400	55,500

Source: ESA, 2023.

3.3. Runway Orientation

Aircraft land and take off into the wind to have the highest airspeed for the lowest ground speed. Thus, wind influences the runway orientation and the number of runways needed to meet the FAA standard of 95% wind coverage. This means that 95% of the time, the crosswind does not exceed the demonstrated crosswind component (design capability) for the aircraft.

Ideally, a runway should be aligned with the prevailing wind. Prevailing winds blow predominantly from one general direction. Wind conditions affect all airplanes in varying degrees, with small aircraft more sensitive to crosswinds.

Previously shown in Table 1.7 are the crosswind components for the ARCs of the aircraft using VRB in varying weather conditions. The primary runway orientation provides the most wind coverage. However, for the ARC A/B-I and A/B-II (10.5 and 13 knots) using VRB, the primary runway, 12R/30L, does not provide 95% wind coverage. Therefore, a crosswind runway is justified at VRB to serve at least these aircraft. Runway 4/22 is the crosswind runway and, combined with the primary runway, provides at least 95% wind coverage for all aircraft operating at VRB.

3.4. Runway Designation

Runways are numbered by their magnetic heading rounded to the nearest 10 degrees. When there are parallel runways, the designation of left (L) or right (R) is added. Magnetic variation, also referred to as declination, is the difference between true north and magnetic north. This variation shifts a little each year, with the west variation continuing to increase to the west. At VRB, the magnetic variation is 7°15’ west.

The true heading of Runway 12R/30L is 110° 36’ 7.26”. Adding the magnetic variation and rounding to the nearest degree results in a magnetic heading of 118° and 298°. Rounded to the nearest 10 degrees results in Runway 12R/30L. With a shift of 0°4.8’ per year, no redesignation of this runway is needed in the planning period.

The true heading of Runway 12L/30R is 110° 51’ 20.03”. Adding the magnetic variation and rounding to the nearest degree results in a magnetic heading of 118° and 298°. Rounded to the nearest 10 degrees results in Runway 12L/30R. With a shift of 0°4.8’ per year, no redesignation of this runway is needed in the planning period.

The true bearing of Runway 4/22 is N 36° 10’ 45.77” E. Adding the magnetic variation and rounding to the nearest degree results in a magnetic heading of the crosswind runway is 43° and 223°. This runway is designated as 4/22. With a shift of 0°4.8’ per year, a redesignation of the runway will be needed in about 20 years.

3.5. Airfield Capacity

Airfield capacity is the maximum number of aircraft operations that an airport can support with reasonable levels of delay. VRB’s airfield capacity calculations were prepared in accordance with *FAA AC 150/5060-5, Change 2: Airport Capacity and Delay*. Methodologies from this AC were used to calculate the annual service volume (ASV) of the airfield. These calculations consider the airfield geometry, operational, and meteorological characteristics at VRB.

Mix Index

The percentage of large aircraft — those with a maximum takeoff weight of 12,500 pounds or more — operating at an airport influences its capacity. Large aircraft require more separation from smaller aircraft due to wake turbulence. This reduces the capacity of an airport. The mix index for ASV is C+3D. A and B aircraft are less than 12,500 pounds and do not impact the mix index. C aircraft are12,500 pounds up to 300,000 pounds. D aircraft are more than 300,000 pounds. There are no D aircraft operating at VRB. All the aircraft operating at VRB other than A and B (single-engine and multi-engine piston aircraft) are C aircraft. C aircraft are 18.8% of the VRB operations in the base year of 2022. This rises to 23% in 20 years. As the mix index increases, the ASV will decline due to a higher proportion of larger aircraft operations.

Airfield Configuration

At VRB, the preferred operational configuration is to use the parallel runways 12L/30R and 12R/30L because this provides the highest capacity. Runway 12L/30R is limited to small aircraft only. This configuration is used, unless the wind direction and speed requires the use of the crosswind runway. Typically, when the crosswind runway is in use, almost all the aircraft operations are on Runway 4/22, unless an aircraft requires a longer runway length that is only available on the primary runway. For purposes of calculating the ASV, it was assumed that VRB will operate on the parallel runways or the crosswind runway. Using the wind coverage data, there is an average of 5% of the time that the 10.5-knot and 13-knot crosswind component is exceeded on the parallel runways. Therefore, it was assumed that about 5% of the time, operations at VRB are on Runway 4/22.

Weather Conditions

Using the wind data, the IFR observations are about 10% of the all-weather observations. Therefore, about 10% of the time, it was assumed that VRB is in IFR conditions. While VRB has an ATCT, it is a nonradar tower for IFR flights because the tower needs to call approach control to obtain a clearance. Also, VRB does not have an instrument landing system, so the ASV calculations were based on nonradar IFR operations. Poor visibility and ceiling conditions of less than 500 feet and visibility less than one mile are limited at VRB, so they were not addressed separately in the ASV calculations but included as part of the percentage of IFR conditions.

Touch-and-Go, Percentage of Arrivals, and Exit Taxiways

Depending on the airfield configuration, other factors in the tables in *FAA AC 150/5060-5* take into consideration the percentage of touch-and-go operations, the percentage of arrivals, and the location of exit taxiways. When all the operations are on Runway 4/22, the percentage of touch-and-go operations was assumed to be 21 to 30%, with VRB's mix index between 0 and 40. The arrivals and departures are assumed to be 50% each. A percentage other than 50% is common at commercial service airports with arrival and departure peak hours. When Runways 4/22 and 12R/30L (IFR) are operating as a single runway, they each have two exit taxiways within the desirable distance.

Annual Service Volume

The baseline annual operations, peak month, and average day in peak month are also used in the ASV calculations. The resulting base year ASV is 203,300 annual operations. VRB's base year operations are 65.8% of the ASV. The FAA recommends planning for additional capacity when an airport is operating at approximately 60% of its ASV and implementing capacity enhancements when it is at 80% of its ASV. Also, per Table G-1 in *FAA Order 5100.38D, Change 1: Airport Improvement Program Handbook*, a secondary runway that is not a crosswind runway is eligible for federal funding, when the primary runway or primary runway and secondary runway is operating at 60% of its capacity. Therefore, the parallel runway 12L/30R at VRB should be considered a secondary runway and eligible for federal funding.

Historical operations were almost as high as the ASV in 2019 at 201,644. By the end of the planning period in 2043, the forecast operations at VRB are 307,900 and will exceed the ASV by 104,600 operations. This will result in increasing delays. If delay increases at VRB, because many of the operations are training operations, some may shift to using other local airports to avoid the delay. Opportunities to increase the efficiency of the airfield should be considered.

Taxiway Considerations

Each of the runways at VRB is served by a full-length parallel taxiway on one side of the runway. When there is development on both sides of the runway, a full-length parallel taxiway on each side would reduce runway crossings, thereby enhancing airport safety, and increase the available runway capacity. The alternatives analysis should consider the development of additional full-length parallel taxiways. Also, opportunities to develop bypass taxiways near the ends of runways should be considered, so if an aircraft is holding for a flight plan clearance, others can still depart, improving the utilization of the runway. The location and alignment of connector taxiways should be considered. Also, the location and use of engine run-up pads near runway ends should be reviewed to make sure they are supporting efficient airfield operations and maximizing the developable areas on the airport.

3.6. Runway Requirements

There are multiple factors that are considered for a runway, ranging from the physical length and width of the runway to the required runway safety areas. Each of the factors to be considered for a runway are described in this section and will be applied to each of the runways at VRB.

Runway Length and Width

The required runway length is based on the requirements of aircraft operations. Multiple variables are considered when a pilot identifies if a runway has a suitable length for landing or departing. These variables include runway elevation, slope, condition (wet or dry), wind speed and direction, aircraft weight, and outside temperature.

The FAA provides runway length requirements in *FAA AC 150/5325-4B: Runway Length Requirements for Airport Design*, but recommends the use of aircraft manufacturer operating manuals, especially for larger aircraft. General runway length guidance from aircraft manufacturers is published for a standard day (15°C/59°F, pressure 29.92 inches) at sea level with no wind. The aircraft operating manual provides the data to adjust for varying conditions. Ideally, runways are planned to allow unconstrained operations by critical aircraft. However, physical constraints on or around the airport may limit the length available, in which case pilots must reduce the aircraft takeoff or landing weights to allow for operations on the available runway length.

The FAA specifies the required runway width and the runway shoulder width, based on the ARC of the critical aircraft. The FAA also specifies the allowable grade and grade changes along the length of the runway, based on the ARC of the critical aircraft. These standards also require a clear line of sight along the length of the runway.

Runway Safety Area

The FAA defines the runway safety area (RSA) as “a defined area surrounding the runway consisting of a prepared surface suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway.”[21] The RSA also provides greater accessibility for ARFF equipment if an aircraft leaves the runway pavement. As a prepared surface, there are specific grading requirements associated with the RSA based on the ARC of the critical aircraft. The only items allowed within the RSA are navigational aids fixed by function, such as runway lights. Any objects within the RSA must be frangible, such that they break away if struck by an aircraft.

Runway Object Free Area

The FAA defines the runway object free area (ROFA) as “a clear area limited to equipment necessary for air and ground navigation, and provides wingtip protection in the event of an aircraft excursion from the runway.”[22] Similar to a RSA, any equipment within the ROFA must be frangible. The ROFA does not have grading requirements, but the terrain cannot be higher than the nearest point of the RSA for half the wingspan of the most demanding aircraft of the RDC.

[21] *FAA AC 150/5300-13B: Airport Design*, dated March 31, 2022.
[22] *FAA AC 150/5300-13B: Airport Design*, dated March 31, 2022.

Runway Obstacle Free Zone

The FAA definition of the runway obstacle free zone (ROFZ) is "a defined volume of airspace centered on the runway centerline, whose base elevation is that of the highest runway elevation at that particular location".[23] The ROFZ extends 200 feet beyond each end of the runway. The width of the ROFZ varies, based on the size of the aircraft using the runway. For runways with approach lighting systems, there is an OFZ that extends beyond the runway to protect the approach lighting system. While the ROFZ overlaps the RSA and ROFA, the RSA and ROFA are surfaces on the ground, whereas the ROFZ applies to the airspace above the ground.

Runway Protection Zone

The runway protection zone (RPZ) is a trapezoidal shape beyond the end of each runway to protect people and property on the ground. The RPZ starts 200 feet from the runway threshold. The size of the RPZ is determined by the critical aircraft and visibility minimums associated with each runway end. The FAA recommends that an airport have property interest within the limits of RPZs. The preferred property interest is fee simple, but if the land cannot be acquired, an avigation easement to control object height and land use within an RPZ is acceptable. The goal is for the RPZ to be clear of any incompatible land use or activities and remain that way.

Runway Visibility Zone and Line of Sight

For airports without an ATCT or with a part-time ATCT, such as VRB, the FAA requires an area between intersecting runways, the runway visibility zone (RVZ), to be clear to avoid blocking the view of pilots to an intersecting runway. The FAA specifies the size of the RVZ based on the location of the intersection from the end of the runway. The FAA also has recommended standards for runways that converge but do not intersect, e.g., the extended runway centerlines intersect but the runway pavement does not.

Also, the FAA requires a clear line of sight along the length of the runway. For runways with a full-length parallel taxiway, such as at VRB, any point 5 feet above the runway centerline needs to be visible to any other point 5 feet above runway centerline, for a distance of half the length of the runway.

Declared Distances

When an object is off the end of a runway within the RSA or ROFA or penetrates the approach or departure path and cannot be removed, the FAA provides an alternate means to meet the design standards. These standards are known as declared distances. With declared distances, each takeoff and landing operation on the runway is considered separately, and the portion of the runway available for that operation is identified. With declared distances for some operations, the available runway length is less than the physical length of the runway pavement to provide the standard RSA or ROFA beyond the declared runway end or a clear approach or departure surface.

The takeoff and landing operations under declared distances are divided into four operations: landing distance available (LDA), accelerate-stop distance available (ASDA), takeoff run available (TORA), and takeoff distance available (TODA).

[23] *FAA AC 150/5300-13B: Airport Design*, dated March 31, 2022.

Pavement Strength and Condition

The required pavement strength is dictated by the weight and frequency of the critical aircraft operating on the runway. The strength of the runways required at VRB will vary with the critical aircraft for each runway. For runways used by jet aircraft, the pavement may be grooved, which is a benefit in wet conditions. An aircraft classification number (ACN) and pavement classification number (PCN), recently updated to aircraft classification rating (ACR) and pavement classification rating (PCR), is an international method for identify pavement strength. If the ACR is less than the PCR, an aircraft can use the pavement. Some airports still publish pavement ratings by MTOW and gear configuration.

Instrument Approaches, Navigational Aids, and Lighting Systems

Instrument Approaches

To enhance the utility of a runway in poor weather conditions, an instrument approach procedure may be developed and published for the runway. An instrument approach is a set of maneuvers for an aircraft operating under instrument flight rules to transition to the start of the approach and to a landing. Runways without an instrument approach are considered visual runways, because the pilot lands using only visual references.

Navigational Aids

There are two categories of navaids: those that serve a specific runway and those that serve the overall airport. Runway navaids include items such as precision approach path indicators (PAPIs), runway end identifier lights (REILs), approach lights, and instrument landing systems. Airport navaids are items such as primary wind cones and airport beacons. While not a navaid, an automated weather systems is an airport system that supports instrument approaches by providing real-time weather conditions. **Table 3.2** summarized the navaids at VRB.

TABLE 3.2: SUMMARY OF NAVAIDS AT VRB

Item Description	Owner	LED/Incandescent
Airport Navaids		
Airport Beacon	Airport	Incandescent
Segmented Circle (Lighted)	Airport	Incandescent
Primary Wind Cone	Airport	Incandescent
Runway Navaids		
Runway 12R/30L PAPIs	12R: FAA; 30L: FAA	12R: LED; 30L: LED
Runway 12R/30L REILs	12R: Airport; 30L: FAA	12R: LED; 30L: LED
Runway 4/22 PAPIs	4: FAA; 22: Airport	4: LED; 22: Incandescent
Runway 4/22 REILs	4: Airport; 22: Airport	4: Incandescent; 22: Incandescent
Runway 12L/30R PAPIs	12L: Airport; 30R: Airport	12L: Incandescent; 30R: Incandescent

Lighting

Edge lighting of various intensities is used to mark the edges of runways and taxiways at night and in poor visibility. Medium intensity is the most common type of lighting. PAPIs, REILs, and approach lights provide visual guidance to landing pilots. Approach lighting systems start at the landing threshold and extend into the approach 1,400 to 2,400 feet. The FAA has six approved types of approach lighting systems for runways with precision and nonprecision approaches, with the applicable type of system varying with the type of instrument approach. In addition to enhancing, identifying, and aligning with the runway, if a pilot on an instrument approach can identify the approach lighting system, they are allowed to descend below the minimum descent altitude or decision height to 100 feet above the threshold elevation. To go lower to land, the pilot must see other items in the runway environment. There are no approach lighting systems at VRB.

Approach and Departure Surfaces

In addition to establishing standards for the area around the runway, the FAA has established standards for the approach and departure surfaces off the ends of the runway. There are two documents used to define the approach and departure surfaces:

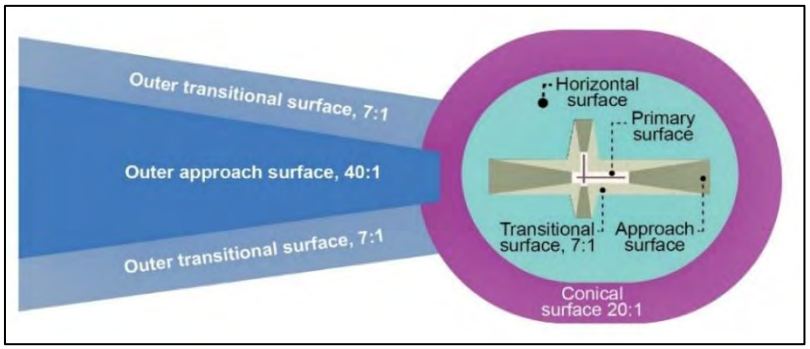
- *Title 14 CFR Part 77* (otherwise known as Federal Aviation Regulations [FAR] Part 77)*: Safe, Efficient Use and Preservation of Navigable Airspace,* establishes the notice requirements for certain proposed construction or alteration of structures, defines the standards for obstructions to air navigation, and details the process for studying potential obstructions to air navigation to determine the effect on the safe and efficient use of navigable airspace.
- *FAA AC 150/5300-13B* provides dimensional standards for threshold siting surfaces and instrument departure surfaces.

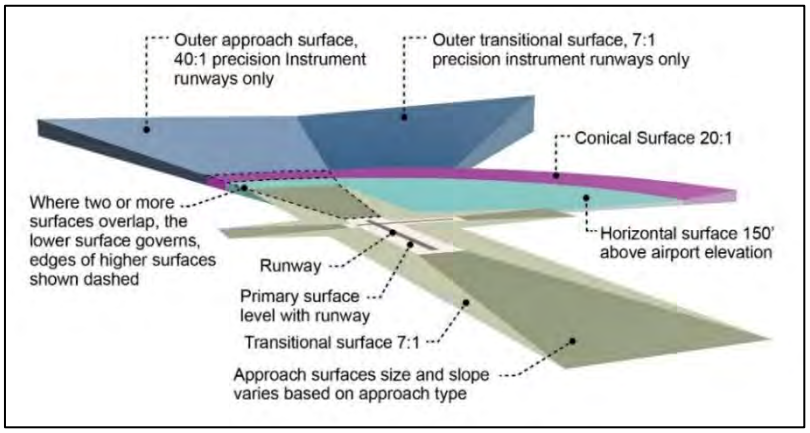
The FAA also uses *FAA Order 8260.3E: United States Standard for Terminal Instrument Procedures (TERPS)* to design instrument approaches, which have obstacle clearance requirements. The TERPs surfaces near an airport are generally represented by the surfaces in FAA AC 150/5300-13B.

14 CFR Part 77 Surfaces

14 CFR Part 77 defines the standards used in determining obstructions and hazards to air navigation. Obstructions are objects that penetrate the imaginary airspace surfaces surrounding an airport and can be a hazard to air navigation, unless an airspace study shows otherwise. Imaginary surfaces include the primary, approach, transitional, horizontal, and conical surfaces, as shown on **Figure 3.1**.

FIGURE 3.1: TITLE 14 CFR PART 77 SURFACES





Primary Surface

The primary surface is an area around the runway that cannot exceed the runway elevation. The primary surface width is determined by the critical aircraft size and approach visibility minimums. If there are different visibility minimums to each runway end, the runway end with the largest primary surface requirement controls the primary surface width for the entire runway.

Horizontal Surface

The horizontal surface protects aircraft operations in the vicinity of the airport. The horizontal surface is 150 feet above the airport elevation, which is the highest elevation on a runway. The radius of the horizontal surface from the end of the primary surface off each runway end is 10,000 feet for runways, other than utility runways with nonprecision approaches, and 5,000 feet for utility visual runway ends. The horizontal surface arcs from the center of primary surface off each runway end and are connected by tangent lines to close the surface.

Transitional Surface

The transitional surface extends outward and upward, from the sides of the primary surface and the approach surfaces at a 7:1 slope up to the horizontal surface.

Conical Surface

The conical surface extends upward and outward from the edge of the horizontal surface for 4,000 feet at a 20:1 slope.

Approach Surface

The approaches at VRB under 14 CFR Part 77 are classified as nonprecision or visual. The 14 CFR Part 77 approach surface for nonprecision instrument runways with visibility minimums as low as 3/4 of a mile has an inner width equal to the primary surface of 1,000 feet and extends 10,000 feet, beginning 200 feet from the runway end, with an outer width of 4,000 feet at a slope of 34:1.

Nonprecision instrument runways with visibility minimums greater than 3/4 of a mile have an inner width of 500 feet. The approach surface extends 10,000 feet, beginning 200 feet from the runway end, with an outer width of 3,500 feet at a slope of 34:1.

For utility runways with visual approaches, the approach surfaces have an inner width of 250 feet. The approach surface extends 5,000 feet, beginning 200 feet from the runway end, with an outer width of 1,250 feet at a slope of 20:1.

If a precision approach is considered as a future improvement, it has an inner width of 1,000 feet. The approach surface extends 50,000 feet, beginning 200 feet from the runway end, with the first 10,000 feet at 50:1 and the remaining approach surface at 40:1. It has an outer width of 16,000 feet.

Threshold Siting Surface

With the implementation of GPS-based approaches (RNAV approaches), rather than revising 14 CFR Part 77, the FAA issued additional approach standards through its advisory circulars and orders. The threshold siting surfaces from *AC 150/5300-13B,* Tables 3-2 to 3-4[24], must be kept clear for the associated instrument approach.

For the approach end of runways expected to accommodate instrument approaches having visibility greater than or equal to 3/4 of a mile, the threshold siting surface is offset 200 feet from the landing threshold, has an inner width of 400 feet, an outer width of 3,400 feet, and a length of 10,000 feet. This surface has a slope of 20:1.

For visual approaches serving small aircraft with approach speeds of 50 knots of more, the surface starts at the runway end, has an inner width of 250 feet widening to 700 feet at 2,250 feet from the runway end and continuing at a width of 700 feet, for an additional 2,750 feet. It has a slope of 20:1.

To accommodate a runway end with an instrument approach with vertical guidance, a surface known as the visual guidance surface (VGS) starts at the runway threshold with an inner width of the runway width plus 200 feet, a length of 10,000 feet, and an outer width of 1,520 feet with a slope of 30:1.

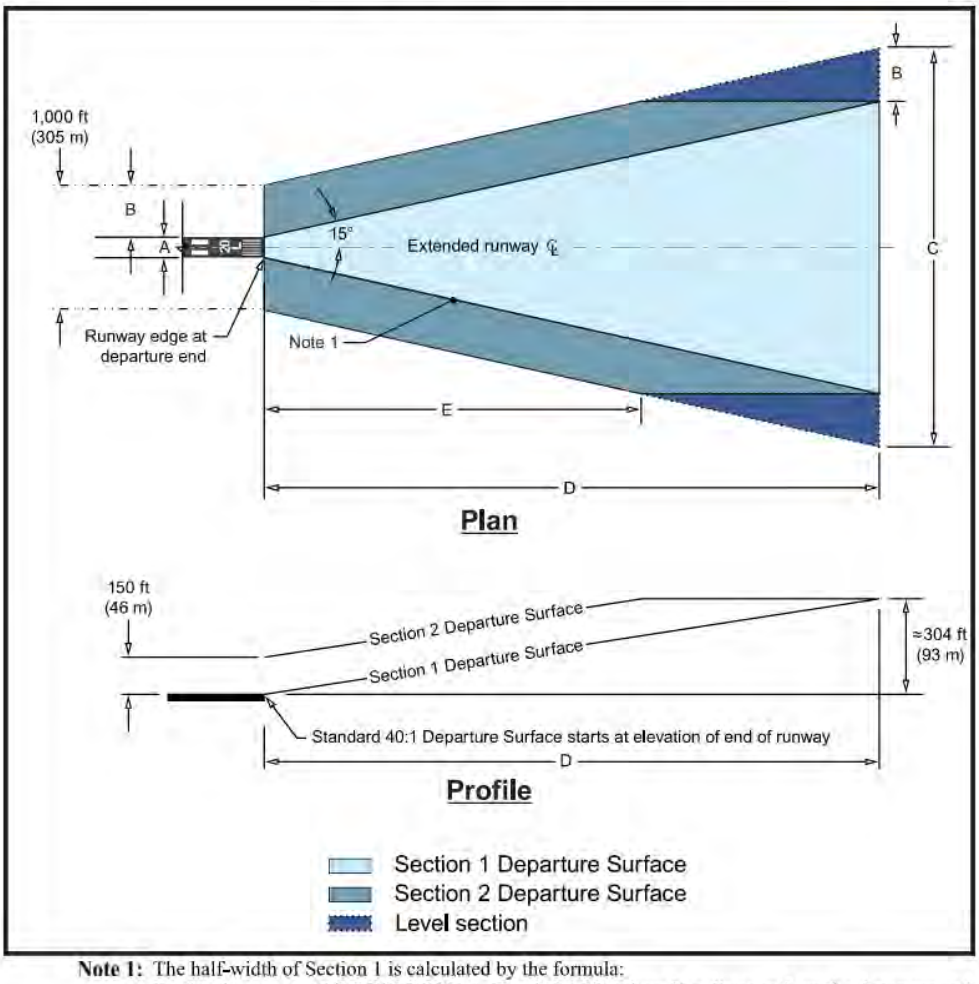
[24] FAA AC 150/5300-13B: Airport Design, dated March 31, 2022.

Departure Surfaces

On runways that support instrument departures, the FAA has designated an instrument departure surface. Per FAA AC 150/5300-13B, Table 3-5, the departure surface starts at the end of the departure threshold and is 12,152 feet long, with an outer width of 7,512 feet. The inner width is 1,000 feet. The center portion of the inner width of the departure surface, the width of the runway, starts at the runway end elevation and goes up to 150 feet above runway elevation at 500 feet from centerline. The entire approach surface goes up at a 40:1 slope along the extended runway centerline. While it is desirable to provide a clear departure surface, the FAA can design and publish instrument departure takeoff minimums, (obstacle) departure procedures, and takeoff obstacle notes to mitigate obstacles in departure surfaces. **Figure 3.2** depicts the departure surface. A clear departure surface is one of the considerations in establishing takeoff declared distances.

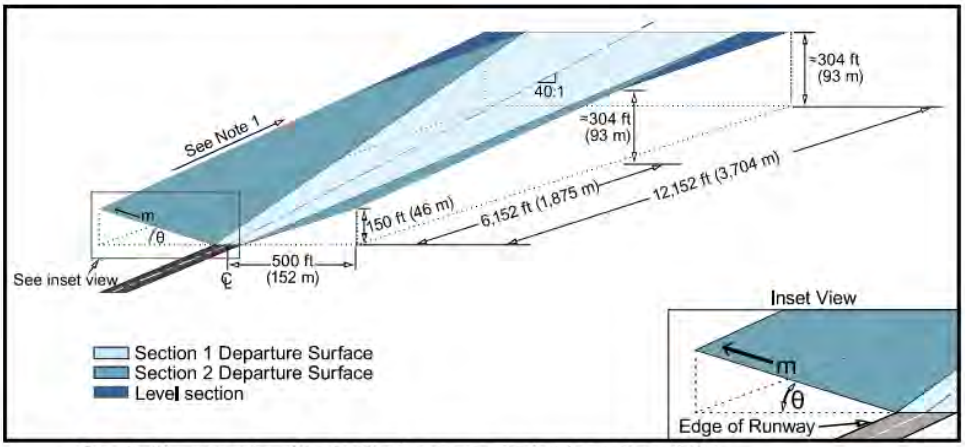
FIGURE 3.2: DEPARTURE SURFACE FROM FAA AC 150/5300-13B

Figure 3-9. Instrument Departure Surface



Note 1: The half-width of Section 1 is calculated by the formula:
Section $1_{\text{Half Width}}$ = (1/2 RWY Width) + (Tan 15° × X), where X = distance from the departure end of the runway.

Figure 3-11. Departure Surface – Perspective View (Without Clearway)



Note 1: The outer edge of the Section 2 Departure Surface has a slope of 40:1.
Note 2: The 304-foot (93 m) value represents the height above the DER.

3.7. Runway 12R/30L

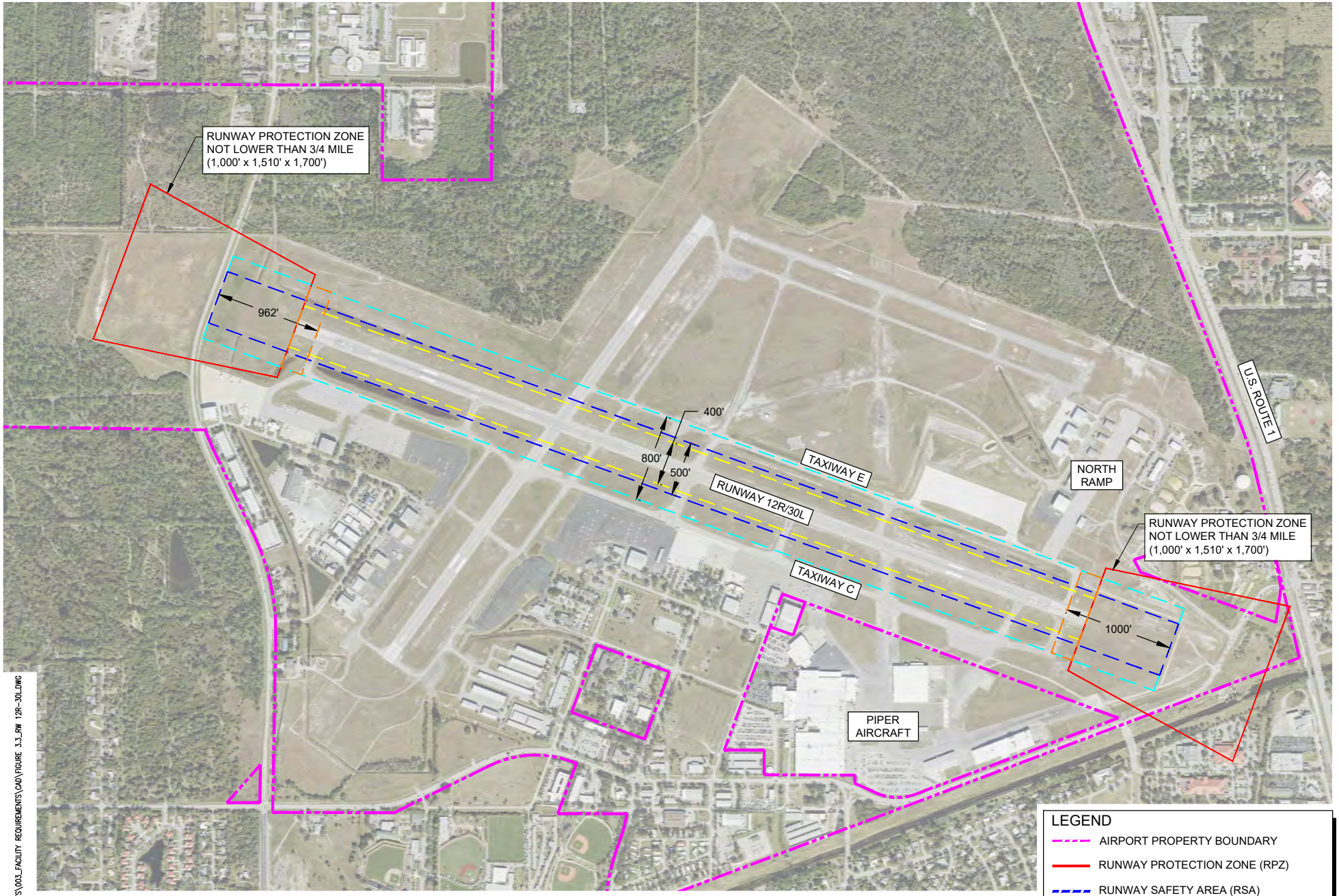
The runway standards described above will be applied to each runway at VRB. As previously identified in Table 2.26, which summarizes the approved forecast, the critical aircraft for Runway 12R/30L is the Airbus A220-300, ARC C-III, and the future critical aircraft is the Gulfstream 650, ARC D-III. The instrument approach visibility minimums are 3/4 of a mile, which converts to approximately 4,000 feet in runway visual range (RVR). If there is no change in future instrument approaches, this results in an existing and future RDC of C-III-4000 and D-III-4000, respectively, which are listed in **Table 3.3** and depicted on **Figure 3.3**.

TABLE 3.3: RUNWAY 12R/30L DESIGN STANDARDS

Item Description	Existing Runway 12R/30L	Future Runway 12R/30L
Runway Design Code (RDC)	C/D-III-4000	C/D-III-4000
Critical Aircraft	Airbus A220	Gulfstream 650
Runway Length	7,314’	7,314’
Runway Width	100’	150’
Runway Shoulder	15’	25’
Runway Blast Pads	200’ x 140’	200’ x 140’
Visibility	Not lower than ¾ mile	Not lower than ¾ mile or lower than ¾ mile
Runway Reference Code (ARC)	C/D-III less than 150,000 lbs. MTOW	C/D-III greater than 150,000 lbs. MTOW
FAR Part 77 Category	NP(D) – RW 12R NP(D) – RW 30L	NP(D) – RW 12R NP(D) – RW 30L
Runway Safety Area (length beyond runway end x width)	Standard: 1,000’ x 500’ 12R actual beyond: 962’ 30L actual beyond: 1,000’	1,000’ x 500’
Runway Safety Area (length before runway end x width)	600’ x 500’	600’ x 500’
Runway Object Free Area (length beyond runway end x width)	1,000’ x 800’	1,000’ x 800’
Runway Object Free Area (length before runway end x width)	600’ x 800’	600’ x 800’
Runway Obstacle Free Zone (length beyond runway x width)	200’ x 400’	200’ x 400’
Approach Runway Protection Zone (length x inner width x outer width)	1,700’ x 1,000’ x 1,510’	1,700’ x 1,000’ x 1,510’ or 2,500’ x 1,000’ x 1,750’
Departure Runway Protection Zone (length x inner width x outer width)	1,700’ x 500’ x 1,010’	1,700’ x 500’ x 1,010’
Runway Marking	Precision (12R)/Nonprecision (30L)	Precision (12R)/Nonprecision (30L)
Runway Lighting	Medium Intensity	Medium Intensity
Runway Centerline to Taxiway Centerline Separation	400–475’ (Existing) 400’ (Standard)	400–475’ (Existing) 400’ (Standard)

Sources: FAA AC 150/5300-13B, dated March 31, 2022; FAA Airport Data and Information Portal (ADIP), accessed March 31, 2023.

Notes: NP(D): nonprecision approach runway larger than utility with visibility minimums as low as ¾ mile.



LEGEND

- AIRPORT PROPERTY BOUNDARY
- RUNWAY PROTECTION ZONE (RPZ)
- RUNWAY SAFETY AREA (RSA)
- RUNWAY OBSTACLE FREE ZONE (ROFZ)
- PRECISION OBSTACLE FREE ZONE (POFZ)
- RUNWAY OBJECT FREE AREA (ROFA)

N

0 1,200

GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 11:57 AM ALEXA02176
I:\20J08S\20A0069W01\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.3_RW 12R-30L.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	RUNWAY 12R/30L DESIGN STANDARDS

DRAWN BY:	JA	FIGURE 3.3
CHECKED BY:	SZ	

Runway 12R/30L Length

Runway 12R/30L is the primary runway at VRB. It is also the Part 139 runway. The runway is 7,314 feet long by 100 feet wide. Runway 12R/30L has roads beyond both ends. To provide a clear RSA and ROFA, there are declared distances in use on Runway 12R/30L. The perimeter fence is 962 feet from the end of Runway 12R, with its location fixed relative to 43rd Avenue, and the perimeter road reduces the length of the RSA and ROFA beyond the physical end of Runway 12R. To provide a 1,000-foot-long RSA and ROFA beyond Runway 12R, the ASDA and LDA on Runway 30L is shortened to 7,276 feet, as summarized in Table 3.3**.**

The existing and future critical aircraft for Runway 12R/30L is the Airbus A220 (ARC C-III) and Gulfstream 650 (ARC D-III), respectively. Airbus publishes airport planning information for its aircraft. The Airbus A220 with a PW1524G engine type requires 6,500 feet to depart on a standard day and 6,900 feet to depart on a hot day (+15°C) at MTOW. With the PW1521G engine, to operate within the 7,200-foot runway, it is limited to an MTOW of 143,000 pounds on a standard day and 141,000 pounds on a hot day. There is more runway length provided than required for the Airbus A220, regardless of the engine, for landing on a dry runway. The Gulfstream 650 has a takeoff distance of 5,858 feet at sea level on a standard day at MTOW. The existing and future critical aircraft can operate on Runway 12R/30L, albeit with some weight restrictions with certain engine models. Due to the surrounding development, no extensions are recommended. However, options to provide a full RSA and ROFA without the use of declared distances should be considered in the alternatives to maximize the length of the existing runway pavement.

Runway 12R/30L Width

For an ARC C-III or D-III runway or aircraft with a MTOW of less than 150,000 pounds, Runway 12R/30L provides the required 100 feet of width. The Airbus A220-300 has a maximum takeoff weight of 156,300 pounds. Therefore, applying the ARC C/D-III standards for aircraft with a maximum takeoff weight of more than 150,000 pounds should be considered in the future. The ARC C/D-III standards for more than 150,000 pounds MTOW include a runway width of 150 feet, shoulder width of 25 feet, and runway blast pad width of 200 feet. It is recommended that widening the runway 50 feet and adding 10 feet to the shoulders be considered in the alternatives analysis.

Runway Lighting and Signage

Runway 12R/30L is equipped with MIRLs, and all runway lighting is LED. MIRL meets the requirements of an instrument approach including lower than 3/4 of a mile. Some airfield signs are LED; however, the remaining signs that are incandescent are recommended to be upgraded to LED. The instrument approaches at VRB have minimums of not less than 3/4 of a mile. To obtain visibility minimums less than 3/4 of a mile, approach lights are required. The alternatives analysis should consider if an approach with less than 3/4 of a mile is feasible at VRB. If it is, a future approach light system will be required on that runway(s).

RSA, ROFA, and ROFZ

As identified under runway length, the perimeter road and fence are within 1,000 feet of the end of Runway 12R, so declared distances are in use to provide the 1,000 feet for the RSA and ROFA for landings and aborted takeoffs on Runway 30L, reducing the LDA and ASDA by 38 feet, as summarized in **Table 3.4**. The ROFZ that extends 200 feet beyond the runway end is clear.

TABLE 3.4: SUMMARY OF DECLARED DISTANCES FOR RUNWAY 12R/30L

Declared Distances				
Runway	LDA	ASDA	TORA	TODA
Runway 12R	7,314 feet	7,314 feet	7,314 feet	7,314 feet
Runway 30L	7,276 feet	7,276 feet	7,314 feet	7,314 feet

Sources: FAA ADIP, VRB, accessed March 27, 2023.

The RSA is to be clear of objects, excluding those fixed by function, such as runway lights. It is also to be graded and capable under dry conditions of supporting an aircraft. The FAA has established required longitudinal and traverse grades for an RSA. During the 2023 Part 139 airfield inspection, the FAA identified some areas along Runway 12R/30L that need to have the grading checked. A review of these grades is ongoing.

The ROFA is limited to equipment necessary for air and ground navigation to provide wind tip protection in the event of an aircraft excursion from the runway. The perimeter road at VRB is within the Runway 30L ROFA. It is parallel to the north side of the ROFA and within the corner of the southside ROFA. The perimeter road should be relocated outside the Runway 30L ROFA. Until that occurs, operational controls are used to avoid use of the road within the ROFA when aircraft are present on or approach Runway 12R/30L.

Runway Protection Zone

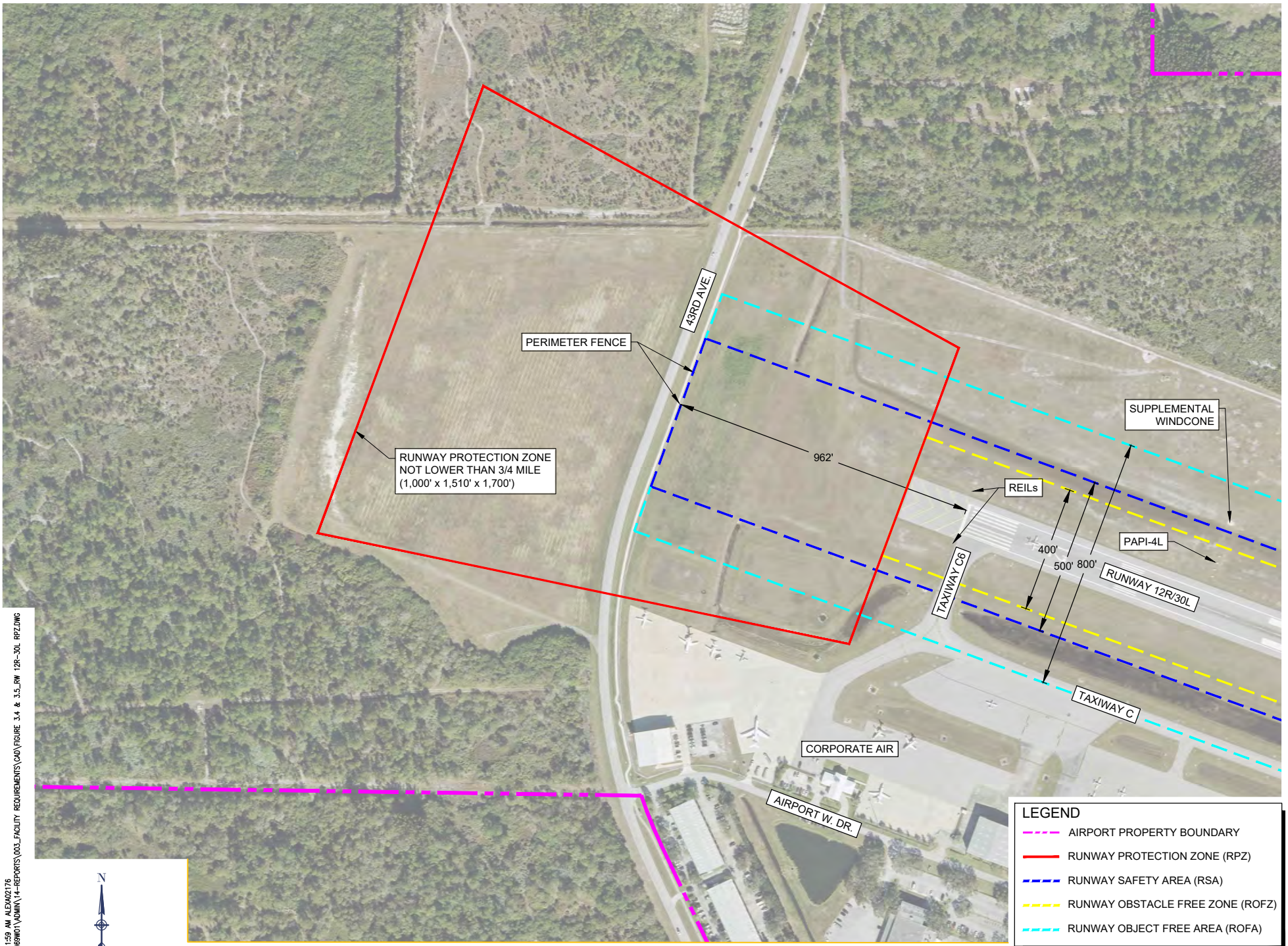
The goal of an RPZ is to protect people and property on the ground and should remain clear of incompatible land use. While it is recommended to avoid roads within the RPZ, when constructing a new runway or making improvements to a runway, existing roads are acceptable when there are no changes to a runway. When the landing threshold and a runway's end of takeoff length are the same, the larger RPZ — typically the approach RPZ — controls, and only one is depicted on the ALP. When declared distances are in use, there are separate approach and departure RPZs, if departure lengths are reduced.

Runway 12R

On Runway 12R, 43rd Avenue and the airport's perimeter road and fence are within the RPZ, as depicted on **Figure 3.4**. While objects are present, the airport has fee simple controlling interest over the Runway 12R RPZ, except for the 43rd Avenue right of way, which is publicly owned. If there are no changes to the runway, the FAA considers this condition to be legacy. If there are changes to the runway, including lower approach minimums, improvements to the RPZ need to be considered. This is typically accomplished through an RPZ analysis that considers various alternatives.

Runway 30L

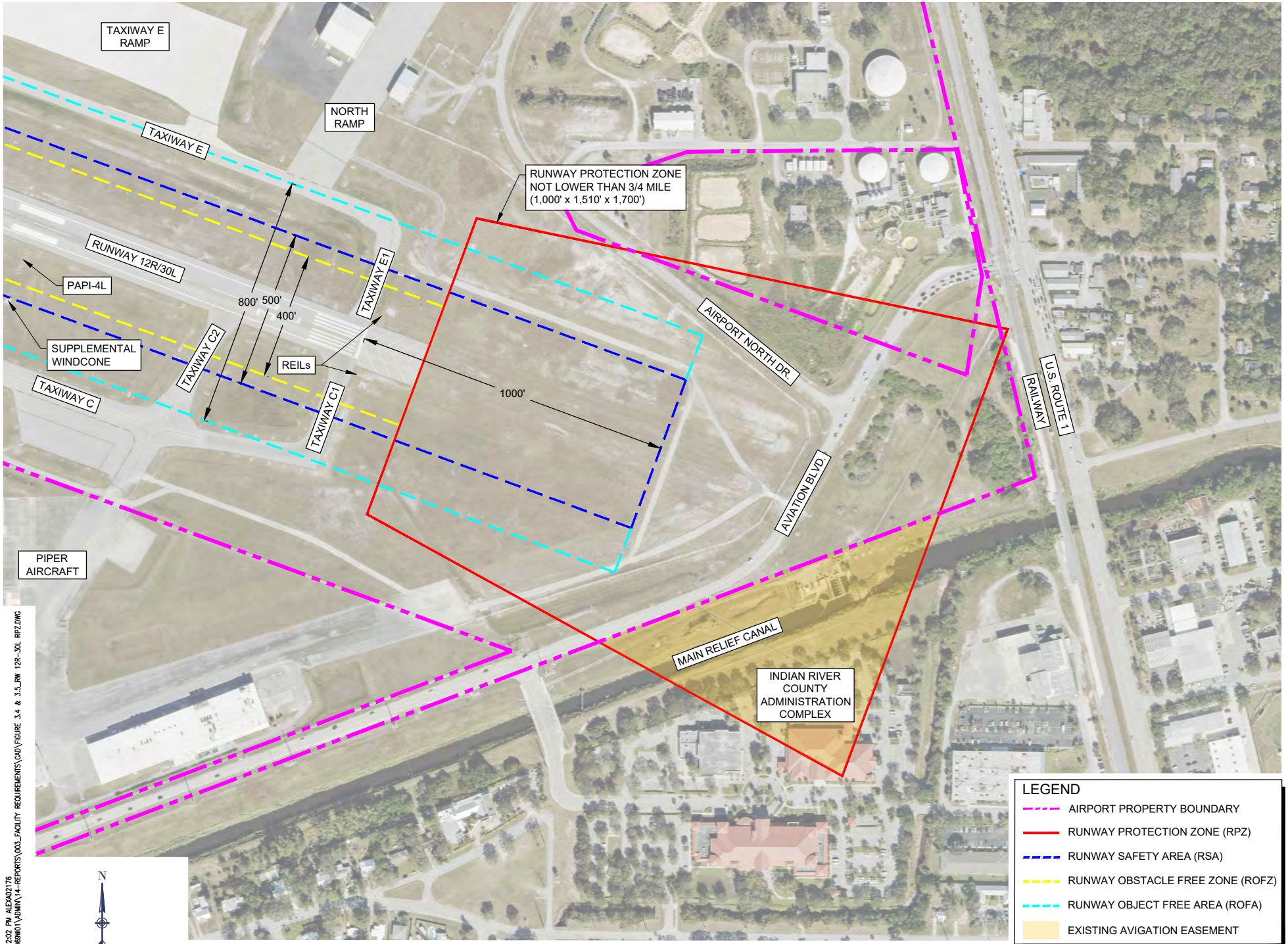
As shown on **Figure 3.5**, several objects are within the RPZ on the Runway 30L end, including Aviation Boulevard, Airport North Drive, the main relief canal, and the Indian River County Administration Complex. The airport owns the majority of the Runway 30L RPZ fee simple. The southeast corner is protected with avigation easements. FDOT is studying alternatives to improve the intersection of U.S. 1 and Aviation Boulevard. All remaining alternatives under consideration are at ground level. The location of the railway and main relief canal limit the opportunities to modify the road system within the Runway 30L RPZ. Any roadway improvements should not be any closer to the runway end than the existing condition. Any proposed changes to the road system would require an RPZ analysis to be submitted to the FAA to evaluate the proposed land use changes and alternatives considered.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 11:59 AM ALEXA02176
I:\20J08S\20A0069W01\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.4 & 3.5_RW 12R-30L RPZ.DWG

VERO BEACH REGIONAL AIRPORT MASTER PLAN	RUNWAY 12R RUNWAY PROTECTION ZONE	DRAWN BY: JA CHECKED BY: SZ	FIGURE 3.4



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 12:02 PM ALEXA02176
I:\20J08S\20A0069W01\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.4 & 3.5_RW 12R-30L RPZ.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

RUNWAY 30L RUNWAY PROTECTION ZONE

DRAWN BY: JA
CHECKED BY: SZ

FIGURE 3.5

Runway Visibility Zone and Line of Sight

Runways 12R/30L and 4/22 intersect. Therefore, with a part-time tower, there is an RVZ that should be kept clear. As shown on **Figure 3.6**, a portion of the Skyborne apron that includes 46 aircraft tie-down positions and a portion of the Paris Air apron that includes three helicopter parking positions are within the RVZ. Also, aircraft holding at Taxiway A, Taxiway C5, and Taxiway D would be within the RVZ. The FAA recommends that the apron layout keep aircraft parking positions outside an RVZ. Opportunities to minimize the parking of aircraft within the RVZ should be considered to maximize the visibility within the Runway 12R/30L and Runway 4/22 RVZ.

Runway 12R/30L has a maximum grade change of 0.22% and an effective grade of 0%. Therefore, Runway 12R/30L meets the FAA's standards for a clear line of sight along the length of the runway. Runway 12R/30L was rehabilitated in 2022. The FAA design standards are for no grade changes within 1/4 of the runway or 2,500 feet, whichever is less for a runway serving ADG C or larger aircraft. The first 1,650 feet of Runway 12R have no grade change. This is slightly less than 1/4 of the runway. However, the grade change of 0.08% is nominal. Runway 30L has three minimal grade changes within the last 1/4 of the runway, the greatest being 0.4%. With the existing taxiways at VRB, similar runway grades had to be maintained when the runway was rehabilitated to tie into the taxiways. Because of the flat grades on Runway 12R/30L, no centerline grade changes are recommended.

Pavement Strength and Condition

Runway 12R/30 L was rehabilitated in 2022. Therefore, the pavement is in excellent condition, as discussed in the airfield pavement condition section in Chapter 1 and detailed in Appendix B. The published PCR is 56/F/A/W/T, with a pavement strength of 85,000 pounds single wheel, 115,000 pounds dual wheel, and 220,000 pounds dual tandem. The Airbus A220 at maximum gross weight on a high strength CBR has an ACR of 28[25]. This is below the PCR, so the pavement has adequate strength to serve the Airbus A220, the heaviest aircraft regularly using VRB.

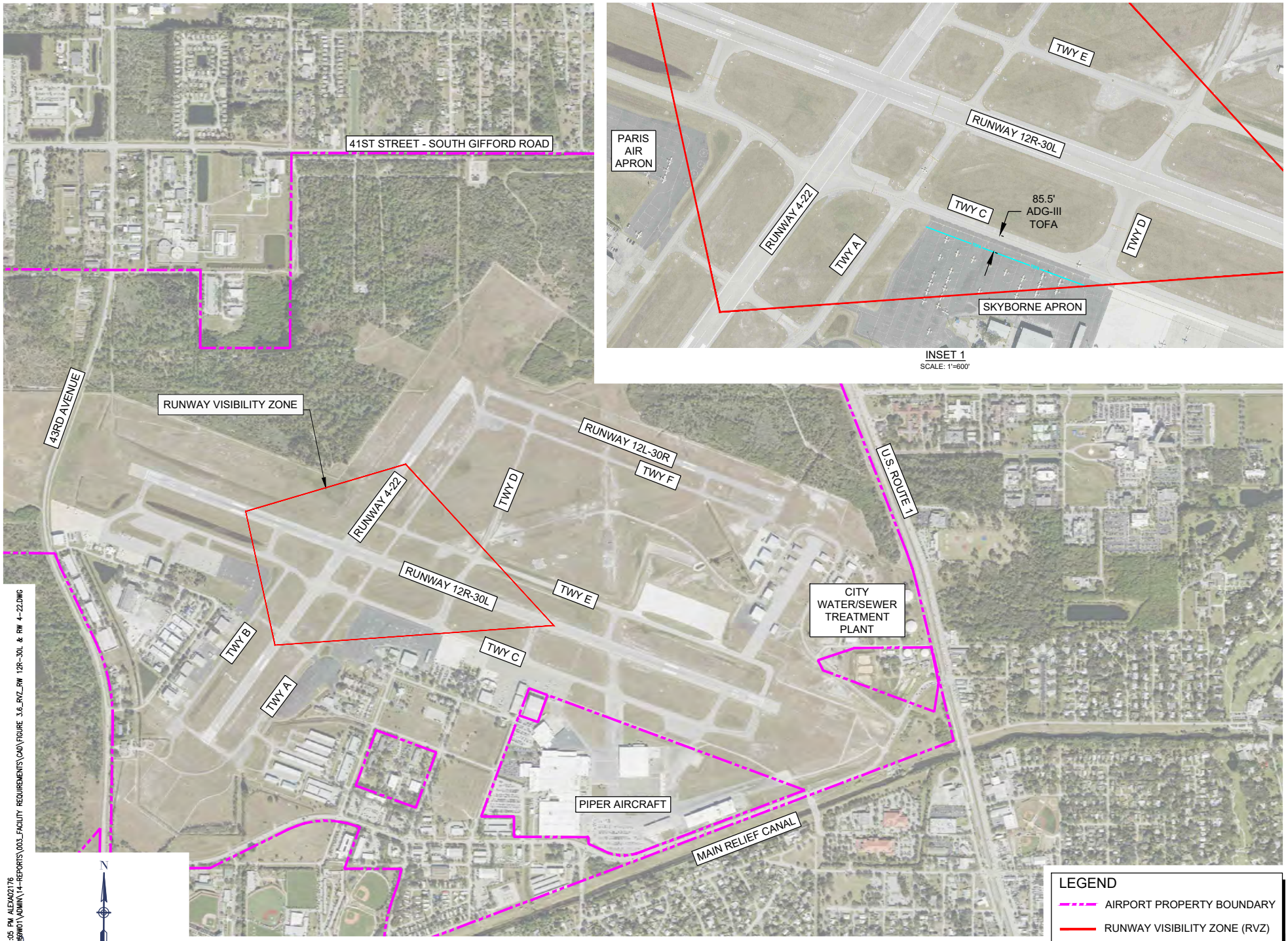
Instrument Approaches and Navigational Aids

Runway 12R/30L is served by LPV RNAV approaches, with minimums of ¾ of a mile visibility, a 256-foot ceiling on Runway 12R, and a 200-foot ceiling on Runway 30L. FAA Table K-1 in *FAA AC 150/5300-13B* depicts the criteria to support instrument flight procedure development, as shown on **Figure 3.7**. For visibility minimums of 3/4 of a mile to less than 1 mile, the minimum approach altitude or the height above touchdown elevation (HAT) minimum is typically 250 feet. At VRB, the HAT minimum for Runway 30L is 200 feet, so the requirement for less than 3/4 of a mile, which includes a HAT of less than 250 feet, should also be considered. With landing minimums of less than 250 feet, the precision obstacle free zone (POFZ) applies to Runway 30L and is in effect during IFR conditions, when an aircraft is on final approach within 2 miles of the runway threshold. The POFZ extends 200 feet beyond the runway end with a width of 800 feet and is clear.

A four-box PAPI system with LEDs is on the left side of both ends of the runway. The runway is also equipped with LED REILs on both runway ends. The REILs on the Runway 30L end are owned and maintained by the FAA.

To obtain lower visibility minimums, an approach lighting system is required. Lower minimums would increase the size of the RPZ to an inner width of 1,000 feet, an outer width of 1,750 feet, and a length of 2,500 feet from an inner width of 1,000 feet, an outer width of 1,510 feet, and a length of 1,700 feet and would lower the slope of the approach surface from 34:1 to 50 to 1. The feasibility of installing an approach light system to enhance instrument approach procedures should be considered during the alternatives analysis.

[25] Airbus, A220 Airport Planning Publication, Issue 030, 2022.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 1:05 PM ALEXA02176
I:\20J08S\20A008WO1\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.6_RVZ_RW 12R-30L & RW 4-22.DWG

VERO BEACH REGIONAL AIRPORT	VERO BEACH REGIONAL AIRPORT MASTER PLAN	RUNWAYS 12R/30L & 4/22 RUNWAY VISIBILITY ZONE	DRAWN BY: JA CHECKED BY: SZ
HANSON			FIGURE 3.6

FIGURE 3.7: CRITERIA TO SUPPORT INSTRUMENT FLIGHT PROCEDURE DEVELOPMENT

Standards [1]	Visibility Minimums [1]			
	< 3/4 statute mile (1.2 km)	3/4 (1.2 km) to < 1 statute mile (1.6 km)	≥ 1 statute mile (1.6 km) straight-in	Circling [2] ≥ 1 statute mile (1.6 km)
HAT [3]	≤ 250 ft	≥ 250 ft	≥ 250 ft	≥ 350 ft
POFZ (PA and APV only)	Required	Not Required	Not Required	Not Required
IT-OFZ	Required	Not Required	Not Required	Not Required
ALP [4]	Required	Required	Required	Required
Minimum Runway Length	4,200 ft	3,200 ft [5]	3,200 ft [5]	3,200 ft [5]
Paved Surface	Required	Recommended [6]	Recommended [6]	Recommended [6]
Runway Markings (See AC 150/5340-1)	Precision	Non-precision	Non-precision	Visual
Holding Position Signs and Markings (See AC 150/5340-1, AC 150/5340-18)	Required	Required	Required	Required [6]
Runway Edge Lights [7]	HIRL or MIRL	HIRL or MIRL	MIRL or LIRL	MIRL or LIRL (Required only for night minimums)
Parallel Taxiway [8]	Required	Required	Recommended	Recommended
Approach Lights [9]	Required	Recommended [10]	Recommended [10]	Not Required
VGSI [11]	Recommended	Recommended	Recommended	Recommended
Applicable Runway Design Standards, (Reference online Runway Design Standards Matrix Tool or Appendix G)	Lower than 3/4 mile (1.2 km) visibility minimums	Not lower than 3/4 mile (1.2 km) visibility minimums	Not lower than 1 mile (1.6 km) visibility minimums	Not lower than 1 mile (1.6 km) visibility minimums
Approach or Departure Surface to be Met (Reference paragraph 3.6.1)	See Table 3-3 or Table 3-4	See Table 3-3 or Table 3-4	See Table 3-3 or Table 3-4	Table 3-3
Optimum Survey Type [12]	VGS	VGS	NVGS	NVGS [13]

Note: 1 ft = 0.305 m

3.8. Runway 4/22

Runway 12R/30L and 12L/30R provide less than 95% wind coverage for 10.5 and 13 knots, as shown in Table 1.7. Therefore, a crosswind runway is needed at VRB to provide the FAA-recommended 95% wind coverage. Runway 4/22 is the crosswind runway. While Runway 4/22 is needed to provide the necessary crosswind coverage for up to ARC B-II aircraft, as indicated in the approved forecast, the existing and future critical aircraft for Runway 4/22 is the Gulfstream 450, ARC D-II. Therefore, larger clear areas for ARC D-II aircraft should be provided on Runway 4/22.

Runway 4 has an instrument approach with visibility minimums of 7/8 of a mile, which converts to an RVR of approximately 4,000 feet. Runway 22 has an instrument approach with visibility minimums of 1 mile, which converts to an RVR of approximately 5,000 feet. This results in an existing and future RDC of D-II-5000. If there is no change in instrument approach visibility, the design standards for Runway 4/22 are listed in **Table 3.5** and depicted on **Figure 3.8.**

Runway 4/22 Length

Runway 4/22 is 4,974 feet long by 100 feet wide. Objects located off the Runway 4 end include 43rd Avenue, Aviation Boulevard, and a drainage swale. To provide a clear RSA and ROFA, there are declared distances in use on Runway 22. The location of a drainage swale approximately 972 feet beyond the end of Runway 4 reduces the length of the RSA and ROFA beyond the physical end of Runway 4. To provide a 1,000-foot-long RSA and ROFA beyond Runway 4, the ASDA and LDA on Runway 22 is shortened by 29 feet to 4,945 feet.

When Runway 12R/30L was closed for rehabilitation in 2022, several of the airport's users had to temporarily use other airports due to not having a runway available that was at least 5,000 feet long. FAA AC 150/5325-4B provides guidance to identify the recommended runway length. For runway length analysis, aircraft are grouped by MTOW into less than 12,500 pounds, 12,500 pounds but less than 60,000 pounds, and more than 60,000 pounds.

The ARC B-II to C-II aircraft operating at VRB typically are within the category of 12,500 pounds but less than 60,000 pounds. The FAA used aircraft operating manuals to develop curves for runway lengths for these aircraft. The aircraft are divided into two groups, 75% of fleet and 100% of fleet, and two operating conditions, 60% of useful load and 90% of useful load. Inputs to the runway length tables in FAA AC 150/5325-4B for VRB are airfield elevation (20 feet MSL) and mean maximum temperature of the hottest month (90°F). For aircraft weighing more than 60,000 pounds, the FAA recommends using the aircraft flight manual. However, these manuals are not typically publicly available for business jet aircraft.

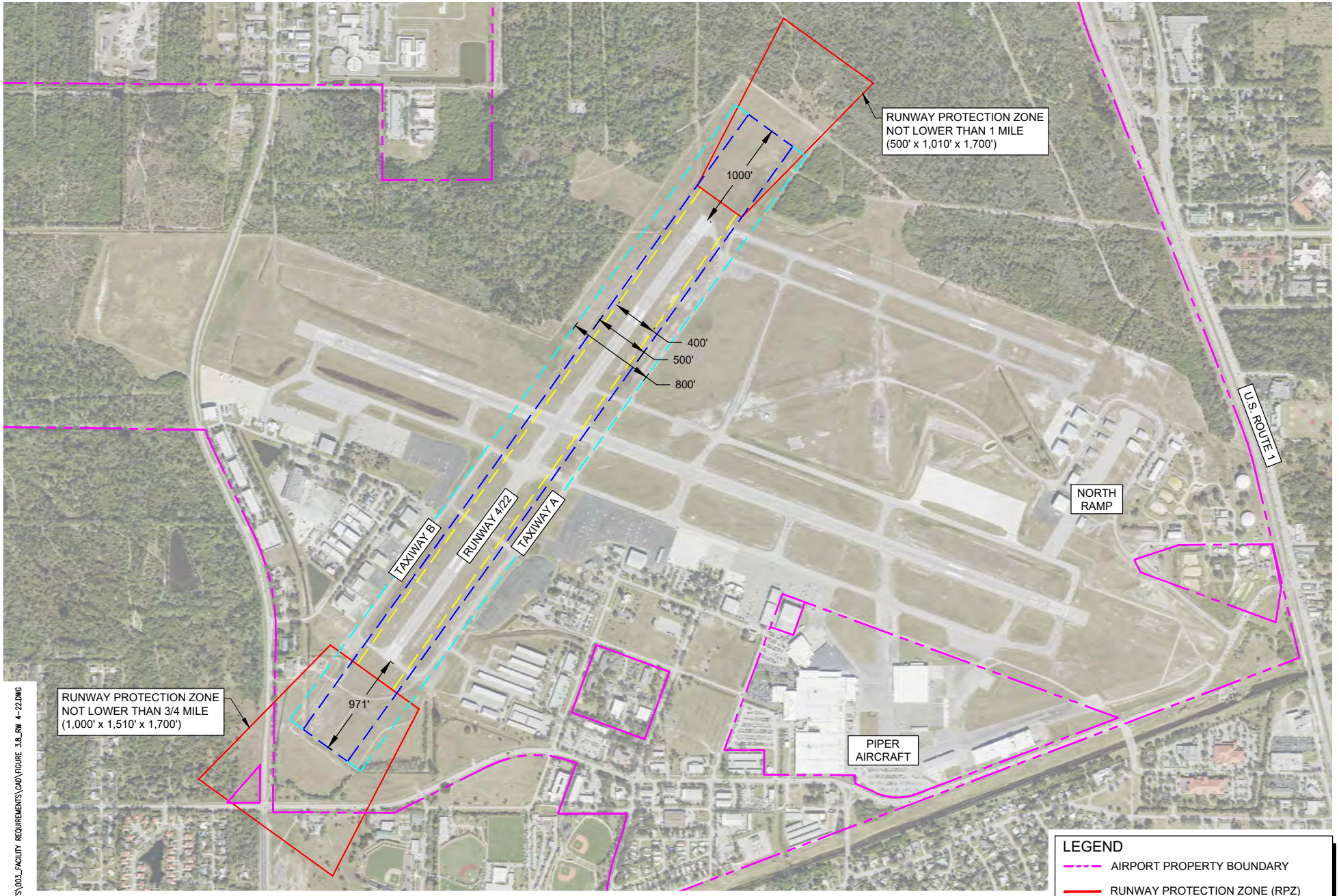
Using the curves in FAA AC 150/5325-4B for aircraft in 75% of the fleet, at 60% useful load they require 4,700 feet and at 90% useful load they require 6,700 feet. One hundred percent of the fleet requires 5,000 feet at 60% useful load and 8,300 feet for 90% useful load. VRB operations by aircraft in 75% of fleet include smaller Cessna Citations, Dassault Falcons, and Learjets, and 100% of the fleet include Bombardier Challenger 600s, larger Cessna Citations, Dassault Falcons, and Learjets.

TABLE 3.5: RUNWAY 4/22 DESIGN STANDARDS

Item Description	Existing Runway 4/22	Future Runway 4/22
Runway Reference Code (ARC)	D-II	D-II
Runway Length	4,974 feet	5,000+ feet
Runway Width	100' (Existing) 100' (Standard)	100'
Runway Shoulder	10'	10
Runway Blast Pad	NA	150' X 120'
Visibility	7/8 mile/1 mile	7/8 mile/1 mile
Runway Design Code (RDC)	D-II-5000	D-II-5000
FAR Part 77 Category	NP(C) – RW 4 NP(C) – RW 22	NP(C) – RW 4 NP(C) – RW 22
Runway Safety Area (length beyond runway end x width)	1,000' x 500' 4 actual beyond: 971' 22 actual beyond: 1,000'	1,000' x 500'
Runway Safety Area (length before runway end x width)	600' x 500'	600' x 500'
Runway Object Free Area (length beyond runway end x width)	1,000' x 800'	1,000' x 800'
Runway Object Free Area (length before runway end x width)	600' x 800'	600' x 800'
Runway Obstacle Free Zone (length beyond runway x width)	200' x 400'	200' x 400'
Approach Runway Protection Zone (length x inner width x outer width)	1,700' x 1,000' x 1,510'/ 1,700' x 500' x 1,010'	1,700' x 1,000' x 1,510'/ 1,700' x 500' x 1,010'
Departure Runway Protection Zone (length x inner width x outer width)	1,700' x 500' x 1,010'	1,700' x 500' x 1,010'
Runway Marking	Nonprecision	Nonprecision
Runway Lighting	Medium Intensity	Medium Intensity
Runway Centerline to Taxiway Centerline Separation	350-–400' (Existing) 300' (Standard)	350–400' (Existing) 300' (Standard)

Sources: FAA AC 150/5300-13B, dated March 31, 2022; FAA Airport Data and Information Portal (ADIP), accessed March 31, 2023.

Notes: NP(C): nonprecision approach runway larger than utility with visibility minimums greater than 3/4 mile.



LEGEND

- AIRPORT PROPERTY BOUNDARY
- RUNWAY PROTECTION ZONE (RPZ)
- RUNWAY SAFETY AREA (RSA)
- RUNWAY OBSTACLE FREE ZONE (ROFZ)
- RUNWAY OBJECT FREE AREA (ROFA)

N

0 1,200

GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT
MASTER PLAN

RUNWAY 4/22
DESIGN STANDARDS

DRAWN BY: JA
CHECKED BY: SZ

FIGURE
3.8

AUG 12, 2024 1:07 PM ALEXA02176
I:\20J08S\20A0069W01\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.8_RW 4-22.DWG

In addition, runway length requirements for the most common ARC B-II, C-I and C-II, and D-I and D-II aircraft operating at VRB were evaluated. The readily available information is for a dry, standard day (59°F and 29.92 in Hg at sea level) at maximum takeoff weight. While VRB is close to sea level, the mean maximum daily temperature at VRB is 90°F. The higher temperatures require longer runway length. The data in **Table 3.5** is for MTOW, so some adjustment in weight could occur in higher temperatures, but commonly a longer runway length is needed. With the FAA runway length curves recommending at least 5,000 feet for 100% of fleet at 60% useful load, and based on the data in **Table 3.6**, up to 5,700 feet is needed to accommodate these aircraft closer to MTOW.

TABLE 3.6: RUNWAY LENGTH FOR COMMON ARC B-II TO D-II AIRCRAFT OPERATING AT VRB

Aircraft Type	ARC	MTOW (pounds)	Balanced Field Takeoff (standard conditions)	Landing Distance (dry, standard conditions)
Challenger 300	C-II	38,850	4,810 feet	3,833 feet
Challenger 600	C-II	41,250	6,200 feet	4,150 feet
Citation Excel	B-II	20,000	4,060 feet	4,917 feet
Citation Latitude	B-II	30,800	3,580 feet	2,480 feet
Citation X	B-II	36,100	5,480 feet	4,693 feet
Falcon 900 EX	B-II	48,300	5,215 feet	3,750 feet
Falcon 2000LXS	B-II	42,800	4,675 feet	2,260 feet
G450	D-II	74,600	5,770 feet	3,260 feet
Gulfstream IV	D-II	73,200	5,700 feet	4,992 feet
Learjet 45	C-I	20,500	4,350 feet	4,063 feet
Learjet 60	C-I	23,500	5,450 feet	5,208 feet

Source: GlobalAir.com, accessed September 18, 2023.

Also, because VRB is supporting commercial service, it is interested in the potential of a backup Part 139 runway. Therefore, the alternatives analysis should consider improvements to Runway 4/22 to meet Part 139 standards.

Runway 4/22 Width

Runway 4/22 provides 100 feet of width and 10-foot shoulders, which meet the design standards for ARC D-II aircraft. Paved blast pads are only required for runways with ADG-III as the critical aircraft. Therefore, paved blast pads are not required for Runway 4/22.

Runway Lighting and Signage

Runway 4/22 is equipped with MIRLs, and all runway lighting is LED. Some airfield signs are LED; however, the remaining signs that are incandescent are recommended to be upgraded to LED.

RSA, ROFA, and ROFZ

A drainage swale is approximately 972 feet from the Runway 4 end of pavement. Therefore, declared distances are in use to provide the standard RSA and ROFA beyond the declared usable end of the runway. This reduces the ASDA and LDA for Runway 22. The published declared distances for Runway 4/22 are summarized in **Table 3.7**. The ROFZ extending only 200 feet beyond the runway end is clear.

TABLE 3.7: SUMMARY OF DECLARED DISTANCES FOR RUNWAY 4/22

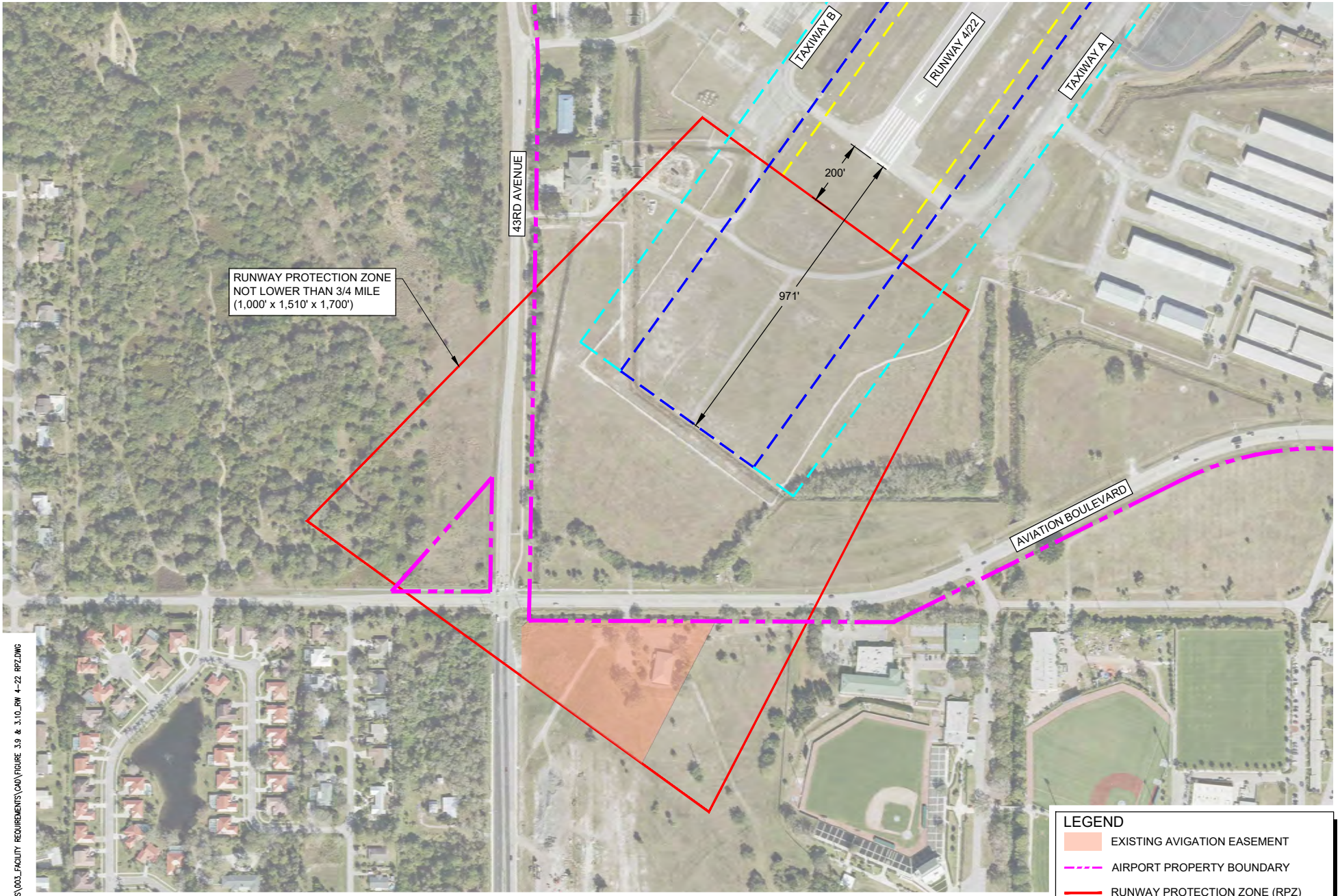
Declared Distances				
Runway	**LDA**	**ASDA**	**TORA**	**TODA**
Runway 4	4,974 feet	4,974 feet	4,974 feet	4,974 feet
Runway 22	4,945 feet	4,945 feet	4,974 feet	4,974 feet

Source: FAA ADIP, VRB, accessed March 27, 2023.

The Runway 12L RSA overlaps the Runway 22 RSA. FAA AC 150/5300-13B recommends avoiding overlapping RSAs to allow sufficient space for entrance taxiway and associated marking and signage. As part of considering improvements to Runway 4/22, providing a standard RSA and ROFA without the use of declared distances and eliminating the overlapping RSAs should be considered. These alternatives should include the consideration of entrance taxiways.

Runway Protection Zone

Similar to the primary runway, the landing threshold and end of takeoff length available on Runway 4/22 are the same. Therefore, only one RPZ is depicted on both runway ends. On Runway 4, 43rd Avenue, Aviation Boulevard, and the ARFF access road are within the RPZ, as depicted on **Figure 3.9**. As shown on **Figure 3.10**, a private airport access road is within the Runway 22 RPZ. Most of the Runway 4 RPZ is on airport property or has an avigation easement. Approximately eight additional acres of avigation easement are needed in the Runway 4 RPZ to protect the current larger RPZ due to the publication of an improved instrument approach procedure since the initial easement was acquired. The entire Runway 22 RPZ is on airport property.



LEGEND

- EXISTING AVIGATION EASEMENT
- AIRPORT PROPERTY BOUNDARY
- RUNWAY PROTECTION ZONE (RPZ)
- RUNWAY SAFETY AREA (RSA)
- RUNWAY OBSTACLE FREE ZONE (ROFZ)
- RUNWAY OBJECT FREE AREA (ROFA)

N

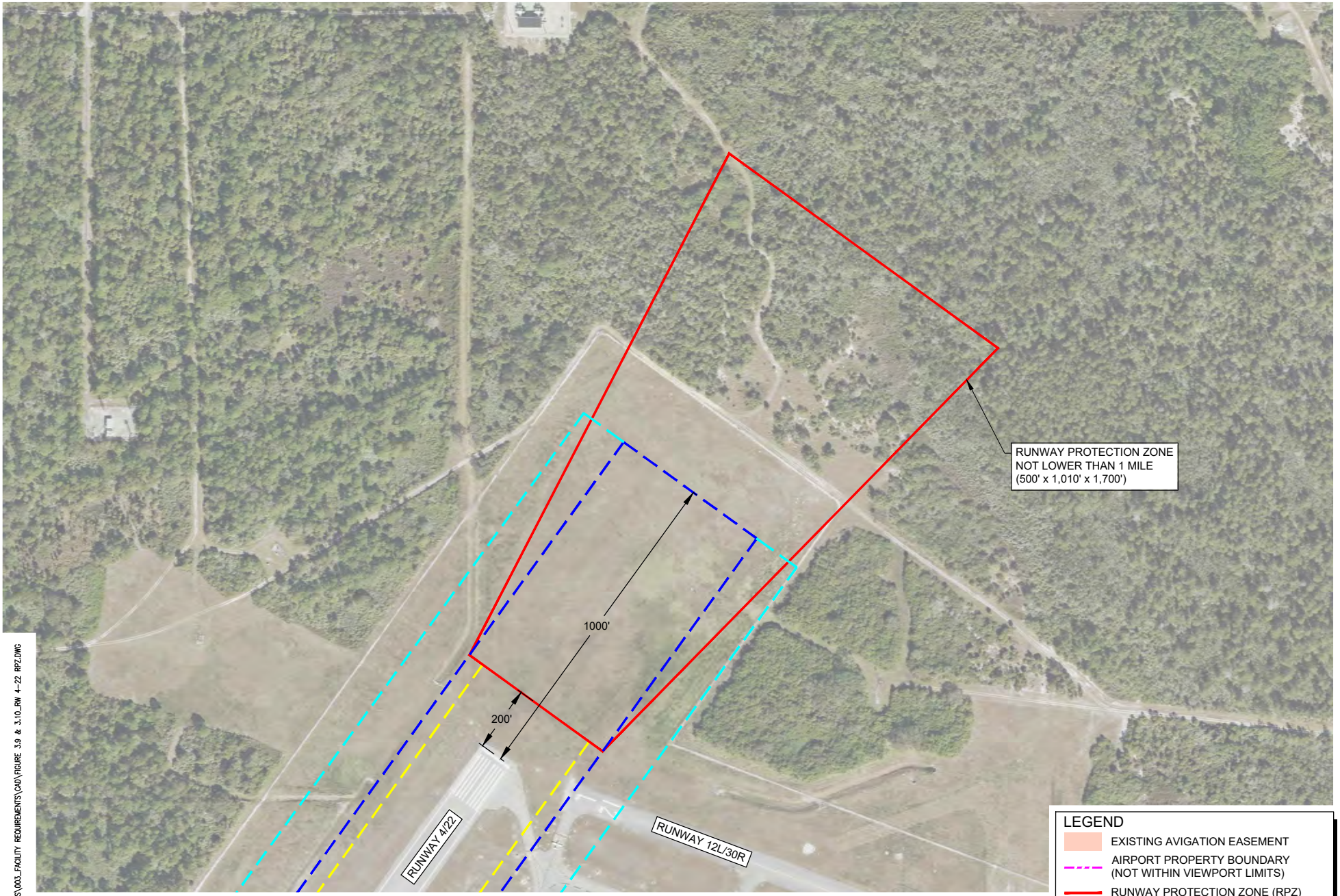
0 400

GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 1:10 PM ALEXA02176
I:\20J08S\20A0069W01\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.9 & 3.10_RW 4-22 RPZ.DWG

VERO BEACH REGIONAL AIRPORT	VERO BEACH REGIONAL AIRPORT MASTER PLAN	RUNWAY 4 RUNWAY PROTECTION ZONE	DRAWN BY: JA CHECKED BY: SZ	FIGURE 3.9



LEGEND

- EXISTING AVIGATION EASEMENT
- AIRPORT PROPERTY BOUNDARY (NOT WITHIN VIEWPORT LIMITS)
- RUNWAY PROTECTION ZONE (RPZ)
- RUNWAY SAFETY AREA (RSA)
- RUNWAY OBSTACLE FREE ZONE (ROFZ)
- RUNWAY OBJECT FREE AREA (ROFA)

N

0 400

GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 1:11 PM ALEXA02176
I:\20J08S\20A0069W01\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.9 & 3.10_RW 4-22 RPZ.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	RUNWAY 22 RUNWAY PROTECTION ZONE	DRAWN BY: JA / CHECKED BY: SZ	FIGURE 3.10

Runway Visibility Zone and Line of Sight

Refer to the Runway 12R/30L Runway Visibility Zone and Line of Sight section for details on the RVZ between Runway 4/22 and Runway 12R/30L.

While Runway 4/22 and Runway 12L/30R do not intersect, they are converging runways, with the extended runway centerlines intersecting. **Figure 3.11** depicts the recommended area to be kept clear based on the takeoff decision speed (v1) associated distance. This area is clear and should be considered during the development of the alternatives analysis.

Runway 4/22 has a maximum grade change of 0.10%. The effective runway gradient for Runway 4 and Runway 22 is -0.1% and 0.1%, respectively, which is within FAA design standards for ARC D-II. The FAA design standards are to avoid grade changes in the first quarter of the runway from the threshold or 2,500 feet, whichever is less for a runway serving AAC D or larger aircraft. The Runway 4 and 22 ends have minimal grade changes of 0.02% and 0.03%, respectively.

Pavement Strength and Condition

Runway 4/22 was rehabilitated in 2013. This project included the reduction of the runway shoulders. At the time of this airport master plan, the pavement is in good condition. The published PCR is 41/F/B/W/T, with a pavement strength of 30,000 pounds single wheel, 115,000 pounds dual wheel, and 220,000 pounds dual tandem. The MTOW of a Gulfstream 450 is 74,600 pounds on dual wheels, which is less than the published pavement strength. Thus, Runway 4/22 has adequate weight-bearing capacity for the existing and future critical aircraft.

Instrument Approaches and Navigational Aids

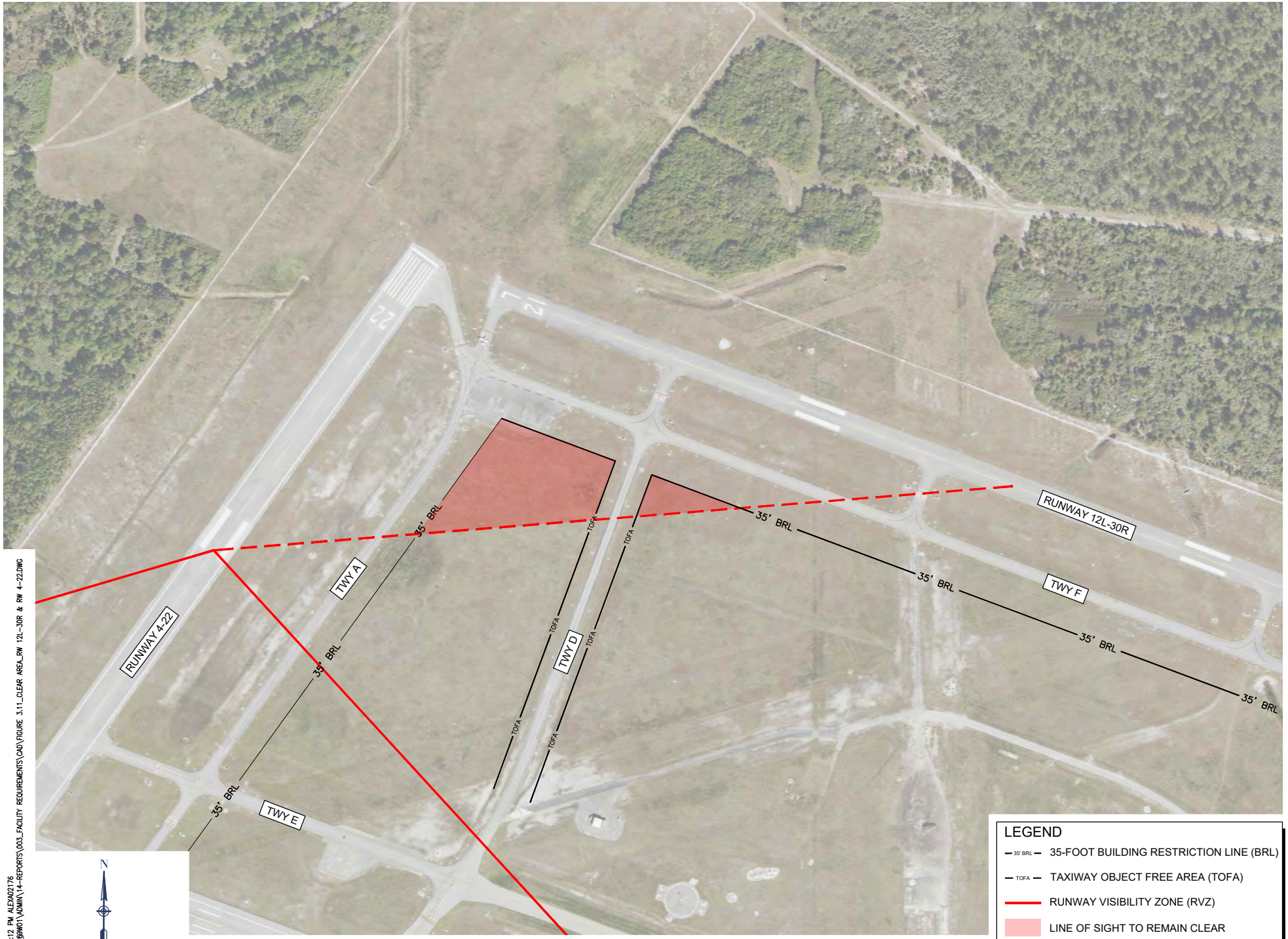
Runways 4 and 22 have LPV RNAV approaches with visibility minimums of 7/8 of a mile and a HAT of 273 feet on Runway 4 and 1-mile visibility and a HAT of 317 feet on Runway 22. Table K-1 in FAA AC 150/5300-13B depicts the criteria to support instrument flight procedure development, as previously shown on Figure 3.7. For visibility minimums of 3/4 of a mile to less than 1 mile, the HAT minimum can be as low as 250 feet. The current HAT for runways 4 and 22 is higher than 250 feet. Therefore, during the preparation of the ALP, the controlling objects for each runway will be identified to determine if any improvements in approach minimums are feasible.

A four-box PAPI system is on the left side of the runway on both runway ends. The Runway 4 PAPIs are LED and FAA-maintained, and the Runway 22 PAPIs are incandescent and airport-owned and -maintained. The runway is also equipped with incandescent REILs on both runway ends. In future lighting projects, it is recommended to upgrading the Runway 22 PAPIs and REILS to LED at the end of their useful life.

3.9. Runway 12L/30R

Runway 12L/30R is a parallel runway per the ASV and is classified as a secondary runway needed to meet the level of operations at VRB. As such, it is considered eligible for FAA funding. The separation between the parallel runway centerlines is 2,185 feet. With a separation of at least 700 feet, simultaneous independent VFR landings and takeoffs are allowed when the tower is open and closed.

VRB has two flight schools. When the winds favor the parallel runways, the tower uses Runway 12L/30R for training, especially for touch-and-go operations. It is common for the Runway 12L/30R pattern to be full and have training as well as have large aircraft waiting to depart on the primary runway. Runway 12L/30R also accommodates some transient operations.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 1:12 PM ALEXA02176
I:\20L08S\20A008\W01\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.11_CLEAR AREA_RW 12L-30R & RW 4-22.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT
MASTER PLAN

RUNWAYS 12L/30R & 4/22
LINE OF SIGHT TO REMAIN CLEAR

DRAWN BY: JA
CHECKED BY: SZ

FIGURE 3.11

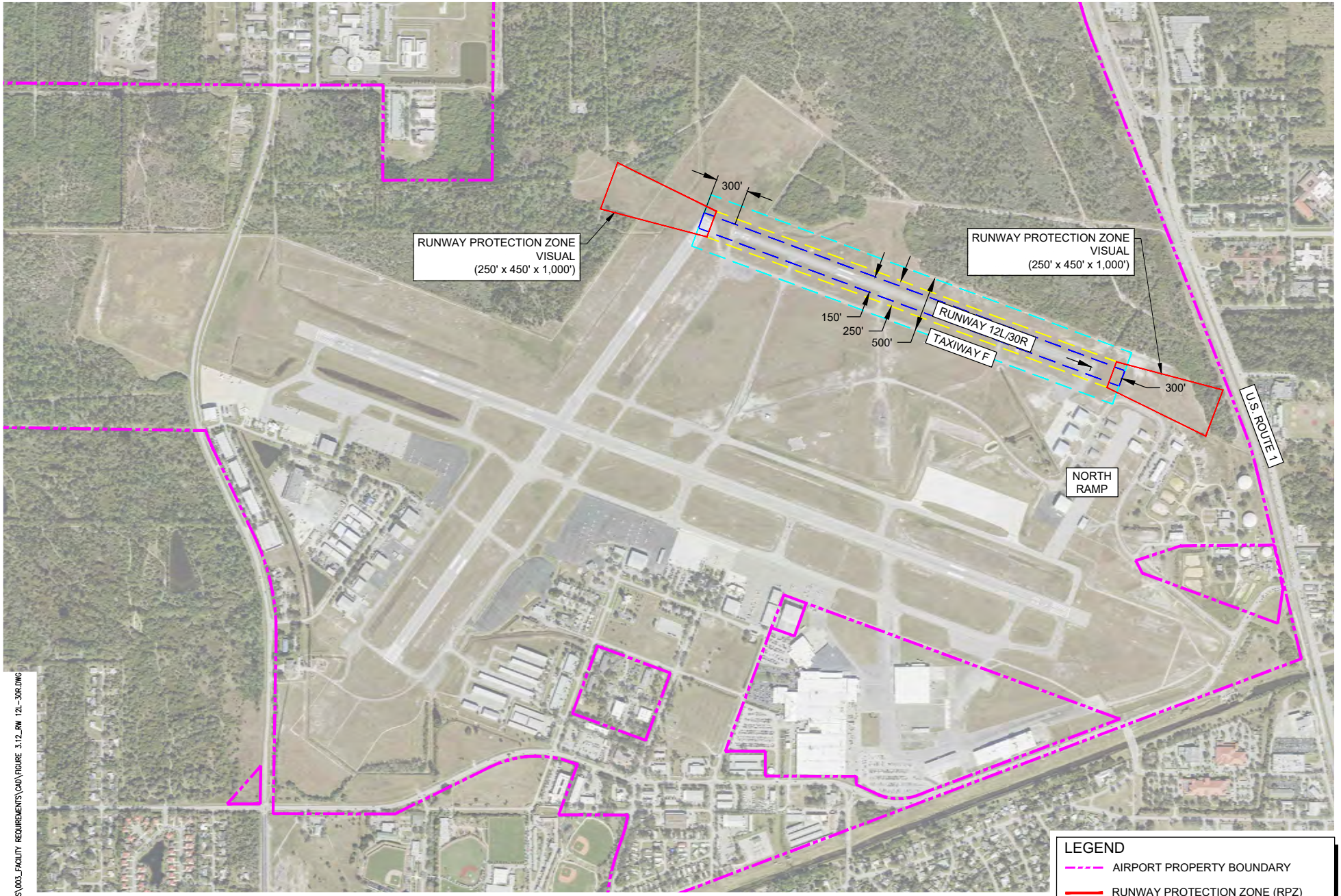
The existing and future critical aircraft for Runway 12L/30R is the King Air 200, ARC B-II small. Runway 12L/30R is a visual runway with no published instrument approach. This results in an existing and future RDC of B-II-5000. The design standards for Runway 12L/30R are listed in **Table 3.8** and depicted on **Figure 3.12**.

TABLE 3.8: RUNWAY 12L/30R DESIGN STANDARDS

Item Description	Existing/Future Runway 12L/30R
Runway Length	3,504 feet
Runway Width	75 feet
Runway Reference Code (ARC)	B-II Small
Visibility	Visual
Runway Design Code (RDC)	B-II Small-5000
Runway Width	75' (Actual) 75' (Standard)
FAR Part 77 Category	VIS(A) – RW 12L VIS(A) – RW 30R
Runway Safety Area (length beyond runway end x width)	300' x 150'
Runway Safety Area (length before runway end x width)	300' x 150'
Runway Object Free Area (length beyond runway end x width)	300' x 500'
Runway Object Free Area (length before runway end x width)	300' x 500'
Runway Obstacle Free Zone (length beyond runway x width)	200' x 250'
Approach Runway Protection Zone (length x inner width x outer width)	1,000' x 250' x 1,510'
Departure Runway Protection Zone (length x inner width x outer width)	1,700' x 500' x 450'
Runway Marking	Basic
Runway Lighting	Medium Intensity
Runway Centerline to Taxiway Centerline Separation	240' (Actual) 240' (Standard)

Sources: FAA AC 150/5300-13B, dated March 31, 2022; FAA Airport Data and Information Portal (ADIP), accessed March 31, 2023.

Notes: VIS(A): visual approach utility runway.



LEGEND

- AIRPORT PROPERTY BOUNDARY
- RUNWAY PROTECTION ZONE (RPZ)
- RUNWAY SAFETY AREA (RSA)
- RUNWAY OBSTACLE FREE ZONE (ROFZ)
- RUNWAY OBJECT FREE AREA (ROFA)

N

0 1,200

GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 1:15 PM ALEXA02176
I:\20J08S\20A0069W01\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.12_RW 12L-30R.DWG

VERO BEACH REGIONAL AIRPORT	VERO BEACH REGIONAL AIRPORT MASTER PLAN	RUNWAY 12L/30R DESIGN STANDARDS	DRAWN BY: JA CHECKED BY: SZ	FIGURE 3.12

Runway 12L/30R Length

Runway 12L/30R is 3,504 feet long by 75 feet wide. Per FAA AC 150/5325-4B, for small aircraft with fewer than 10 passenger seats at 100% of the fleet, the required runway length is approximately 3,600 feet. Per coordination with airport staff, the existing length of Runway 12L/30R is sufficient for multiengine training, although the flight schools prefer to have the multiengine aircraft use the primary runway when activity allows. Any reduction in length on Runway 12L/30R would make it undesirable to use for multiengine operations. Therefore, at a minimum, the existing length should be maintained on Runway 12L/30R.

Runway 12L/30R Width

Runway 12L/30R provides 75 feet of width, which meets the design standards for ARC B-II small aircraft. Paved blast pads are only required for runways with a critical aircraft of an ADG-III or higher. Therefore, paved blast pads are not required for Runway 12L/30R.

Runway Lighting and Signage

Runway 12L/30R is equipped with MIRLs, and all runway lighting is LED. Some airfield signs are LED; however, the remaining signs that are incandescent are recommended to be upgraded to LED.

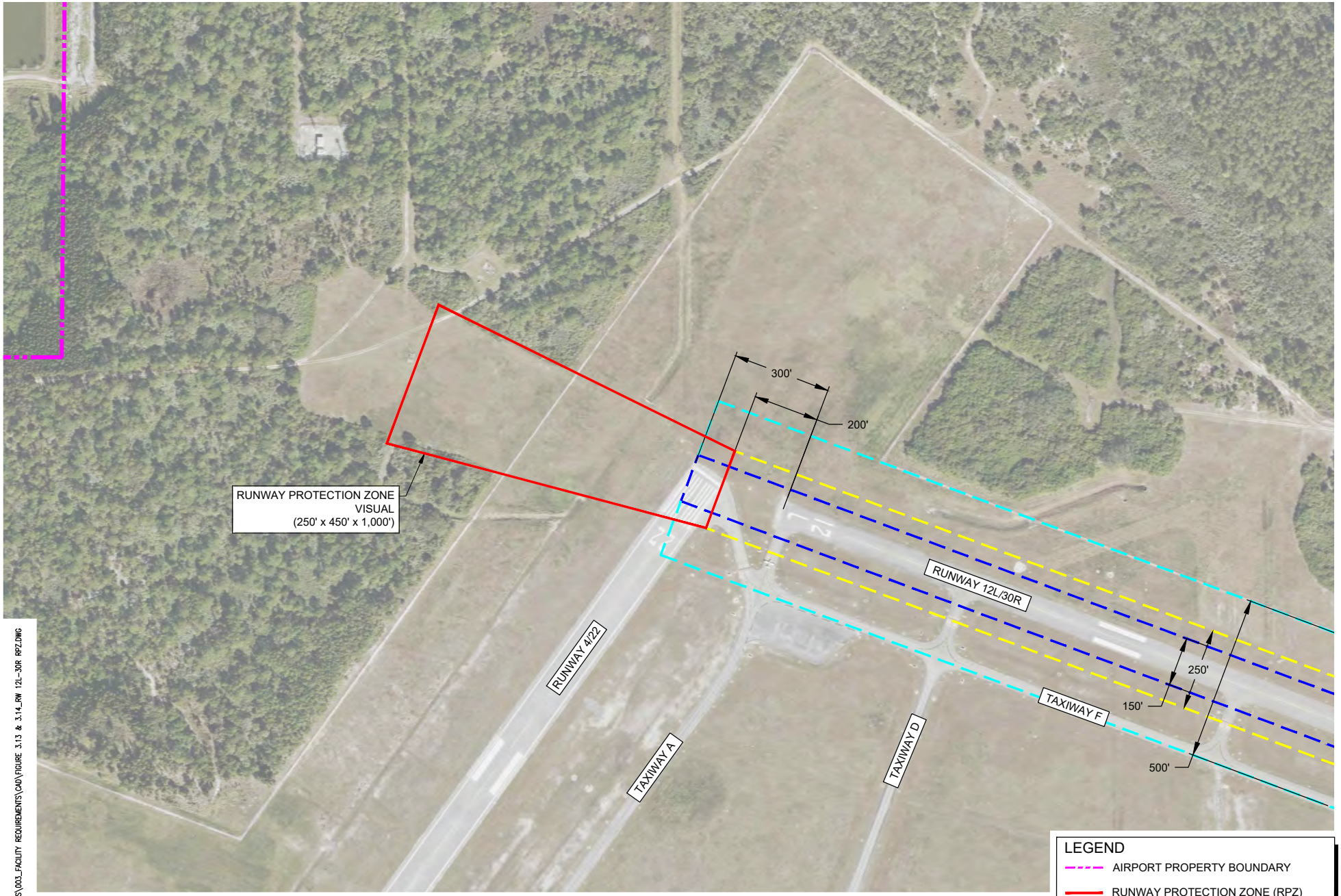
RSA, ROFA, and ROFZ

Runways 12L/30R and 4/22 converge but do not intersect, resulting in the runways having overlapping RSAs. FAA standards recommend avoiding overlapping RSAs to increase the margin of safety and minimize operational limitations.[26] The utility of Runway 12L/30R needs to remain the same by supporting flight training operations. Due to the proximity of existing development adjacent to the north ramp near the Runway 30R end, any changes to the runway length should be evaluated on the Runway 12L end during the alternatives analysis. The evaluation should consider the overlapping RSAs and modifying the parallel taxiway end connector to Runway 4/22, per FAA design standards.

Runway Protection Zone

No declared distances with reduced runway length are in place on Runway 12L/30R, so the landing and takeoff lengths of Runway 12L/30R are the same at 3,504 feet. Therefore, only one RPZ is depicted on both runway ends. On Runway 12L, the Runway 22 end and Taxiway A2 connector are within the RPZ, as depicted on **Figure 3.13**. As shown on **Figure 3.14**, the RPZ off the Runway 30R end is clear. Runway 22 and Taxiway A2 within the Runway 12L RPZ will be addressed in the alternatives analysis as part of considering alternatives to address the overlapping RSAs.

[26] Federal Aviation Administration, AC 150/5300-13B: *Airport Design*, dated March 31, 2022.



LEGEND

- AIRPORT PROPERTY BOUNDARY
- RUNWAY PROTECTION ZONE (RPZ)
- RUNWAY SAFETY AREA (RSA)
- RUNWAY OBSTACLE FREE ZONE (ROFZ)
- RUNWAY OBJECT FREE AREA (ROFA)

N

0 400

GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

VERO BEACH REGIONAL AIRPORT | HANSON

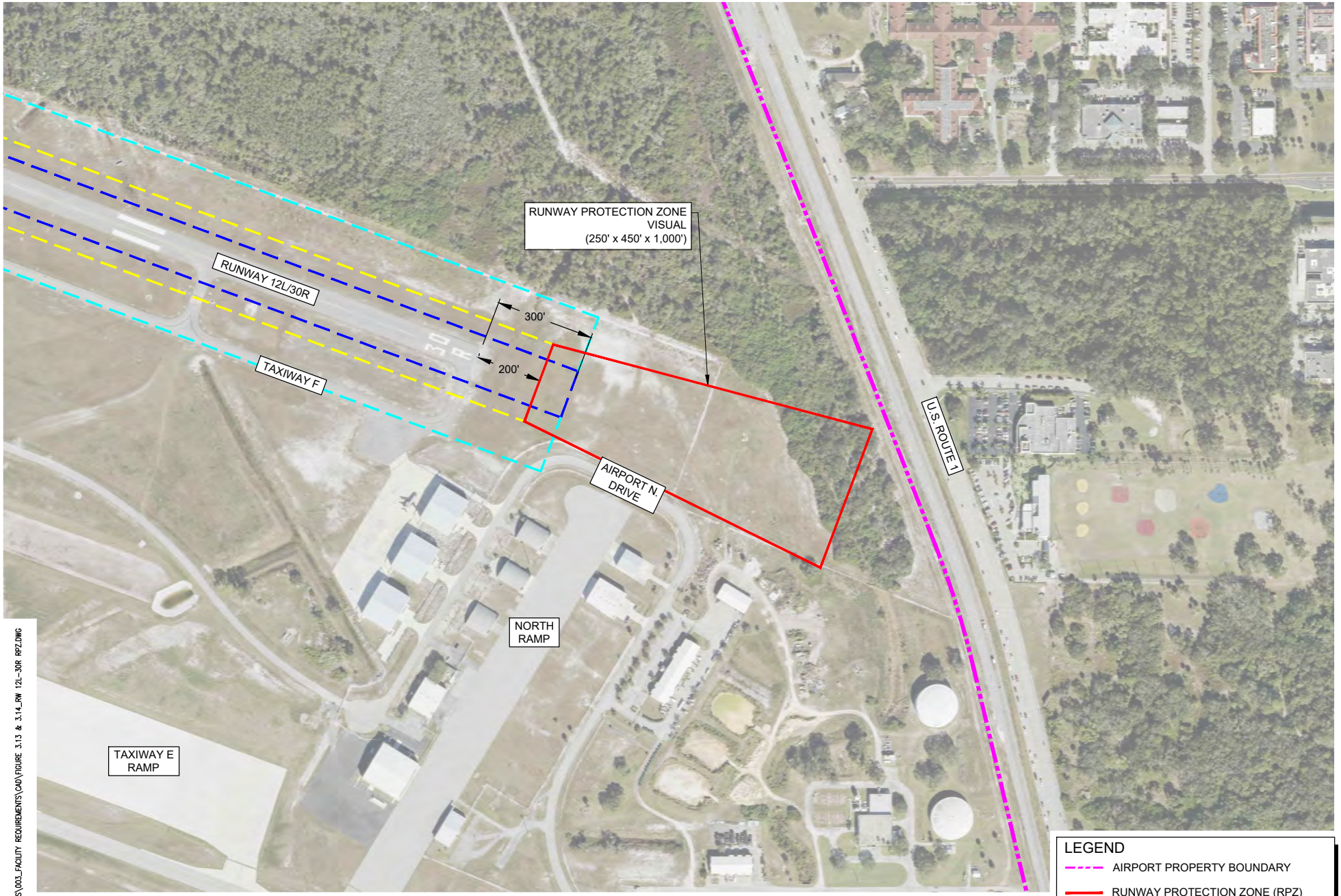
VERO BEACH REGIONAL AIRPORT
MASTER PLAN

RUNWAY 12L
RUNWAY PROTECTION ZONE

DRAWN BY: JA
CHECKED BY: SZ

FIGURE 3.13

AUG 12, 2024 1:17 PM ALEXA02176
I:\20J08S\20A0069W01\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.13 & 3.14_RW 12L-30R RPZ.DWG



LEGEND

- AIRPORT PROPERTY BOUNDARY
- RUNWAY PROTECTION ZONE (RPZ)
- RUNWAY SAFETY AREA (RSA)
- RUNWAY OBSTACLE FREE ZONE (ROFZ)
- RUNWAY OBJECT FREE AREA (ROFA)

N

0 400

GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

RUNWAY 30R RUNWAY PROTECTION ZONE

DRAWN BY: JA

CHECKED BY: SZ

FIGURE 3.14

AUG 12, 2024 1:18 PM ALEXA02176
I:\20J08S\20A006WO1\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.13 & 3.14_RW 12L-30R RPZ.DWG

Runway Visibility Zone and Line of Sight

As discussed under Runway 4/22, while Runway 12L/30R and Runway 4/22 do not intersect, they are converging runways, with the extended runway centerlines intersecting. Figure 3.11 depicts the area recommended to be kept clear and should be considered in the alternatives analysis.

Runway 12L/30R has a maximum grade change of -0.05%. The effective runway gradient for Runway 12L and Runway 30R is 0%. This meets the FAA design standards. The FAA design standards require avoiding grade changes in the first quarter of the runway from the threshold for a runway serving AAC B aircraft. The Runway 12L/30R ends have minimal grade changes of -0.10% and -0.13%, respectively.

Pavement Strength and Condition

At the time of this airport master plan, the Runway 12L/30R pavement is in fair condition, with a published PCR of 8/F/B/Y/T and a pavement strength of 12,500 pounds. Runway 12L/30R is a utility runway that supports small aircraft with an MTOW of 12,500 pounds single wheel, so the pavement strength is adequate.

Instrument Approaches and Navigational Aids

Both ends of Runway 12L/30R have visual approaches only. As a shorter parallel runway to the primary runway, which is used for VFR student training, and with instrument approaches to both ends of the primary runway, no changes to the visual approaches to Runway 12L/30R are recommended.

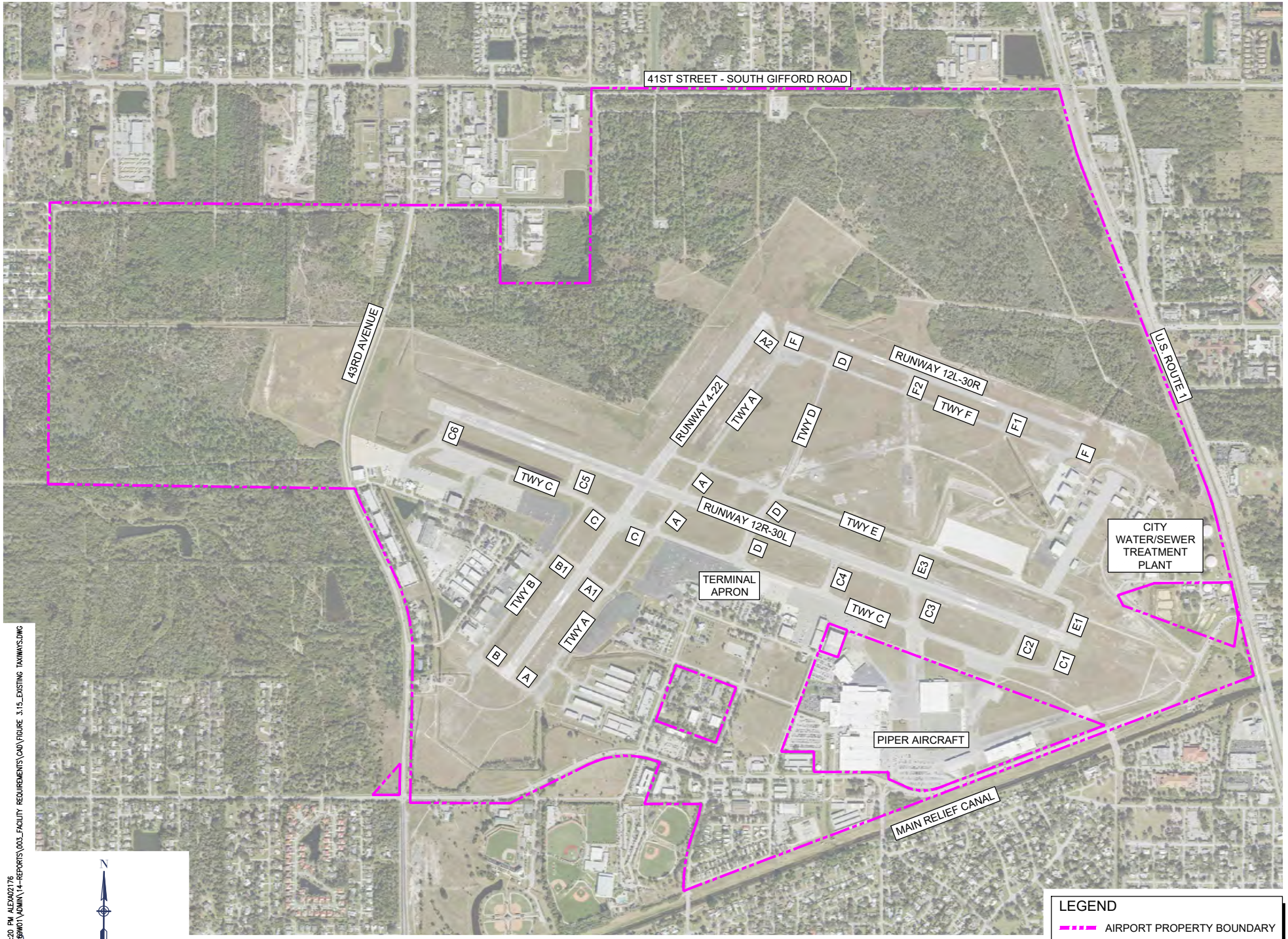
A two-box PAPI system is on the left side of both ends of the runway. Both PAPI systems are incandescent. In future lighting projects, it is recommended to upgrade both sets of PAPIs to LED when they reach the end of their useful life.

3.10. Taxiway Requirements

Taxiway facilities at an airport are established to enhance the safety and operational efficiency of the airfield. Taxiways minimize runway occupancy time by promoting quick entry and exit from the runway, as well as movement between terminal and hangar areas. Taxiways also provide access to and from the runways to terminal areas and aprons. Taxiways are located within the movement area on the airfield, which is under air traffic control when the ATCT is open from 7 a.m. to 9 p.m. daily. Taxilanes provide access from taxiways to aircraft parking and other terminal areas. The taxi speeds on a taxilane are generally no more than 15 miles per hour. Taxilanes are typically located in the nonmovement area outside air traffic control, but if the tower can see, the area controllers may offer guidance.

There are various types of taxiways and taxilanes that make up a taxiway system, including full-length parallel, partial parallel, entrance/exit, connector, bypass, and crossfield taxiways and apron edge and hangar taxilanes. Run-up areas are typically adjacent to a taxiway outside the taxiway object free area (TOFA). FAA AC 150/5300-13B recommends providing engine run-up areas for performing engine ground run-ups and requires locating them to minimize the exposure of engine exhaust in areas of public congregation and areas outside the air operations area (AOA). **Figure 3.15** depicts the existing taxiways at VRB.

Design standards vary for taxiways versus taxilanes and the sizes of critical aircraft using them. Similar to runways, safety and object free surfaces surround the taxiways and taxilanes to enhance the safety of aircraft movements. These surfaces include taxiway safety area (TSA), TOFA, and taxilane object free area (TLOFA).



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

LEGEND

AIRPORT PROPERTY BOUNDARY

AUG 12, 2024 1:20 PM ALEXA02176
I:\20J08S\20A08BW01\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.15_EXISTING TAXIWAYS.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

EXISTING TAXIWAYS

DRAWN BY:	JA	FIGURE 3.15
CHECKED BY:	SZ	

The TSA, TOFA, and the taxiway to taxiway/taxilane or fixed or movable objects are based on the ARC of the critical aircraft for the surface.

The taxiway pavement, shoulder width, and edge safety margin are based on the TDG, which is discussed below.

Table 3.9 summarizes the taxiway and taxilane design standards based on the critical aircraft of each runway. Taxiways that serve more than one runway should be designed for the largest critical aircraft of either runway. If a hangar area only serves A/B-I small aircraft, it can be designed to those standards. If a taxiway serves a hangar area for aircraft larger than the runway it serves, the TDG may need to be larger.

TABLE 3.9: STANDARD TAXIWAY AND TAXILANE REQUIREMENTS PER RUNWAY

Runway (ARC)	Runway to Taxiway Separation	Taxiway Safety Area (TSA)	Taxilane Object Free Area (TLOFA)	Taxiway Object Free Area (TOFA)	Taxiway Centerline to Fixed or Movable Object	Taxilane Centerline to Fixed or Movable Object
Runway 12R/30L (Ex.: C-III; Fut.: D-III)	400’	118’	158’	171’	85.5’	79’
Runway 4/22 (Ex. and Fut.: D-II)	300’ 400’ – lower than 3/4 mile	79’	110’	124’	62’	55’
Runway 12L/30R (Ex. and Fut.: B-II Small)	240’ 300’ – lower than 3/4 mile	79’	110’	124’	62’	55’

Source: FAA AC 150/5300-13B, dated March 31, 2022.

Notes: Ex.: Existing; Fut.: Future

Taxiway Design Groups

The FAA uses a taxiway design methodology that focuses on taxiway geometry by determining the proper turning radii and taxiway fillet geometry. This methodology is known as the TDG and is used to minimize excess taxiway pavement and increase pilot situational awareness. Taxiways and taxilanes are designed to enhance safety by avoiding runway incursions. The design standards for taxiways are for “cockpit over centerline” taxiing, with pavement wide enough to allow a certain amount of wander. This wander limit is known as the taxiway edge safety margin (TESM) and is measured from the outside of the aircraft’s main gear to the edge of the taxiway pavement. Each aircraft is categorized in a TDG, which considers the main gear width (MGW) and cockpit to main gear length (CMG). The existing and future TDG associated with each runway is summarized in **Table 3.10**.

TABLE 3.10: SUMMARY OF TDG PER RUNWAY

Runway	Taxiway Design Group (TDG)	
	Existing	Future
Runway 12R/30L	TDG 3	
Runway 4/22	TDG 2A	
Runway 12L/30R	TDG 2A	

Source: VRB Airport Master Plan: Forecast Chapter, prepared by ESA, 2023.

Taxiway Designations

FAA AC 150/5340-18G: Standards for Airport Sign Systems recommends using guidelines and standards for designating taxiways. For a runway with a parallel taxiway, alphanumeric designators are used at the entrance and exit taxiways at the ends of and along the runway. Apply an increasing, sequentially numbered pattern from one runway end to the other, such as A1, A2, …, A5.[27] Taxiways that do not conform to these standards are not required to be updated until an airport signage plan, an airport layout plan, or a future development occurs. At the time of this airport master plan, four taxiway end connectors at runways 4 (both sides) and 12L/30R at VRB do not have alphanumeric designations and should be updated with the next associated taxiway project. **Figure 3.16** indicates the taxiway redesignations recommended at VRB.

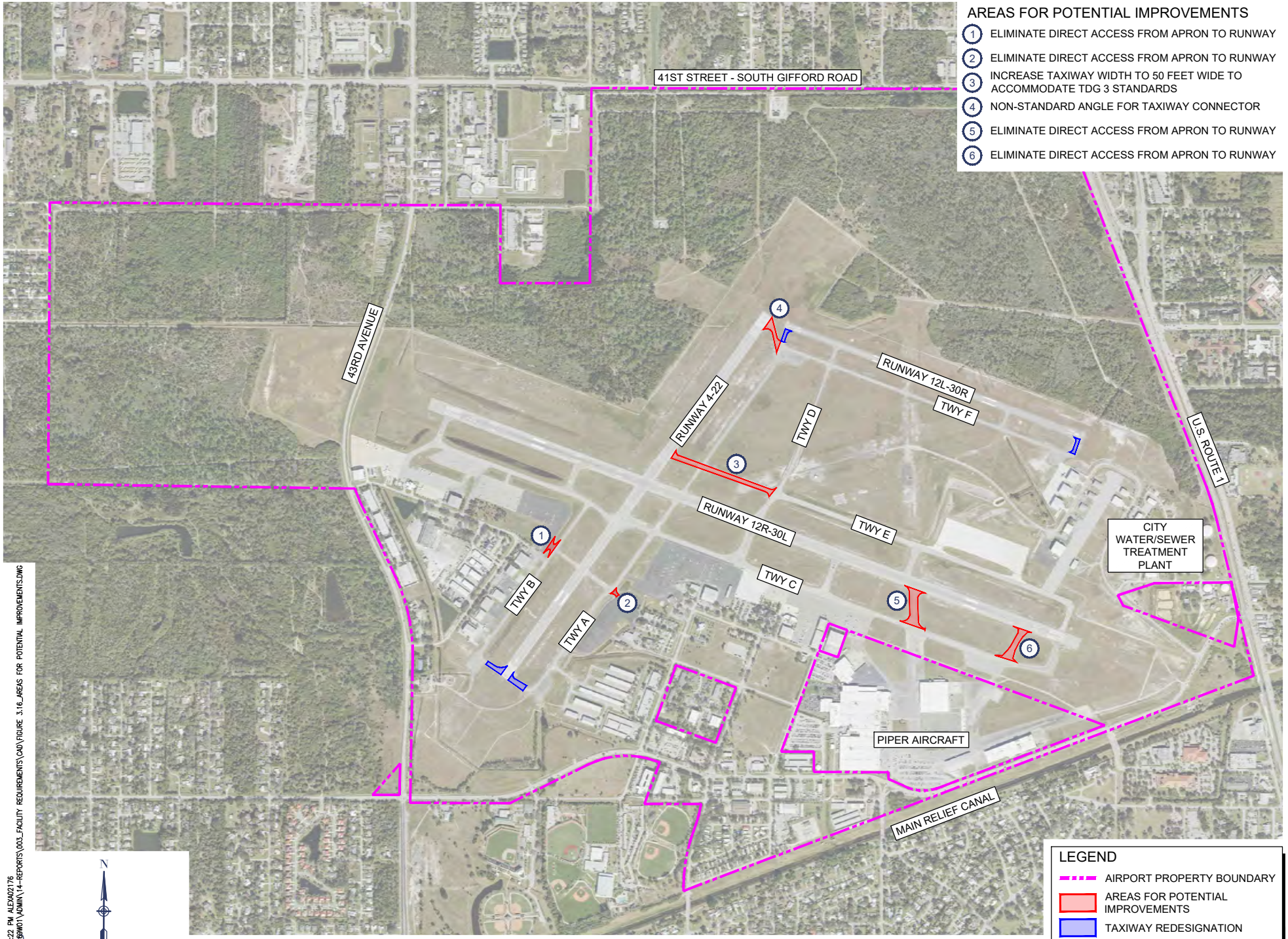
Taxiway Areas Previously Identified for Potential Improvements

Appendix J in FAA AC 150/5300-13B provides guidance to help prevent runway incursions and meet airfield design standards. Areas that should be analyzed include direct apron-to-runway access, wide expanses of pavement at runway-taxiway intersections, an entrance taxiway intersecting a runway not at a right angle, and a wide expanse of holding bay pavement. The taxiways previously identified for improvements at VRB include A1 (direct connection), B1 (direct connection; improvement project in progress), C2 (not 90 degrees), C3 (direct connection and not 90 degrees), A at the end of Runway 22 (not 90 degrees), and widening E 50 feet from D to Runway 4/22. As shown on **Figure 3.16**, these areas should be addressed when projects adjacent to the identified areas are completed.

FAA Hot Spots

A hot spot is a location on an airport movement area where heightened attention by pilots and drivers is necessary[28]. The FAA identifies these hot spots on airport diagrams. These airport diagrams assist pilots in planning for the safest taxi path possible, especially at an airport they may not be familiar with. The ways to improve hot spots should be addressed, as feasible, when construction in the area is contemplated. As depicted on **Figure 3.17**, VRB has one FAA hot spot at the intersection of Runway 4/22 and Taxiway C. Taxiway C has different separation distances from Runway 12R/30L on each side of Runway 4/22. Alternatives to straighten Taxiway C where it crosses Runway 4/22 should be considered. The addition of runway guard lights, flashing lights at the runway hold line, can be used to increase pilot situational awareness and should be considered for this area.

[27] FAA AC 150/5340-18G, dated December 23, 2020.
[28] FAA, Hot Spot Standardized Symbology, Hot Spot Standardized Symbology | Federal Aviation Administration (faa.gov), accessed March 28, 2023.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

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I:\20JOBS\20A0089W01\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.16_AREAS FOR POTENTIAL IMPROVEMENTS.DWG

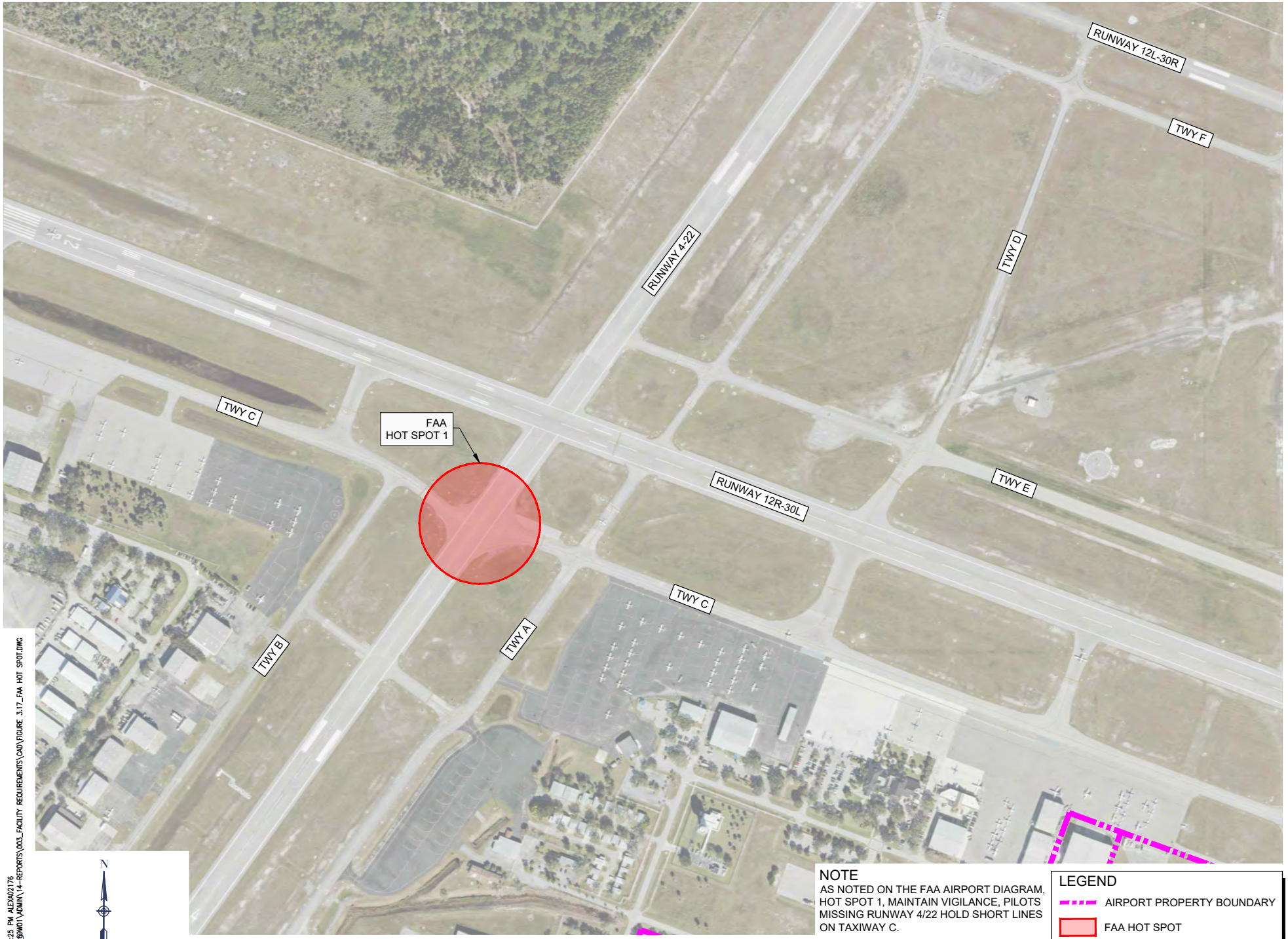
VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

AREAS FOR POTENTIAL IMPROVEMENTS

DRAWN BY: JA
CHECKED BY: SZ

FIGURE 3.16



NOTE
AS NOTED ON THE FAA AIRPORT DIAGRAM, HOT SPOT 1, MAINTAIN VIGILANCE, PILOTS MISSING RUNWAY 4/22 HOLD SHORT LINES ON TAXIWAY C.

LEGEND
AIRPORT PROPERTY BOUNDARY
FAA HOT SPOT

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023; FAA Hot Spot, Federal Aviation Administration, October 2023.

AUG 12, 2024 1:25 PM ALEXA02176
I:\20J08S\20A0089W01\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.17_FAA HOT SPOT.DWG

VERO BEACH REGIONAL AIRPORT / HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	FAA HOT SPOT	DRAWN BY: JA CHECKED BY: SZ	FIGURE 3.17

Taxiways

A summary of the design standards for each taxiway is shown in **Table 3.11**. Only a portion of Taxiway E does not meet the width required for the TDG and needs to be considered for improvements. Other taxiway geometric improvements should also be considered, as detailed in the following sections.

TABLE 3.11: SUMMARY OF INDIVIDUAL TAXIWAYS DESIGN STANDARDS

Taxiway	Existing Width (feet)	Existing TDG	Meets FAA Standards
A	35'/50'	2B/3	Yes
A1	50'	3/4	Yes
A2	35'	2A/2B	Yes
B	35'	2A/2B	Yes
B1	35'	2A/2B	Yes
C	50'	3/4	Yes
C1	75'	5/6	Yes
C2	75'	5/6	Yes
C3	75'	5/6	Yes
C4	70'	3/4	Yes
C5	60'	3/4	Yes
C6	60'	3/4	Yes
D	35'/75'	2B/6	Yes
E	40'	2A/2B	No
F	35'	2A/2B	Yes
F1	35'	2A/2B	Yes
F2	35'	2A/2B	Yes

Source: VRB Airport Layout Plan prepared by Ricondo, 2016.

Taxiway A

Taxiway A is a full-length parallel taxiway on the east side of Runway 4/22. Taxiway A north of Runway 12R/30L is 35 feet wide and south of Runway 12R/30L is 50 feet wide, which meet TDG 2A standards. The Runway 4/22 and Taxiway A separation varies at 350 feet and 400 feet, which meets ADG-II standards of at least 300 feet for ADG II with visibility minimums not lower than 3/4 of a mile. To straighten Taxiway A, the adjacent apron would require modification, which will be considered in the alternatives analysis.

Including the two end connectors, starting from the Runway 4 end, Taxiway A has five connectors: A, A1, C, E, and A2. At the time of this airport master plan, the end connector on the Runway 4 end is designated as A. To comply with FAA standards, an alphanumeric designator should be added to this end connector. A1 and A2 should be redesignated, as needed. A1 provides direct apron-to-runway access and is not consistent with FAA guidelines. To eliminate this, a portion of A1 should be relocated. Per FAA AC 150/5300-13B, Appendix J, A2 on the Runway 22 end does not intersect the runway at a right angle. The acute angle reduces the pilot's vision, and the taxiway geometry increases the width of the pavement. FAA standards for taxiway connectors that are not high-speed exits should be at 90-degree angles. Therefore, alternatives to reconfigure Taxiway A2 should be considered. There is an engine run-up area at the south end of Taxiway A. When landing on Runway 4, taxiways C and E are at least 2,000 feet from the runway end and can serve as exit taxiways for smaller aircraft. When landing on Runway 22, taxiways C and A1 can serve as exit taxiways. The quicker an aircraft can exit a runway, the higher the runway capacity.

Taxiway B

Taxiway B is a partial parallel taxiway on the west side of Runway 4/22. The taxiway starts on the Runway 4 end and extends north to Taxiway C. Taxiway B is 35 feet wide and meets TDG 2A standards. It has a 375-foot taxiway centerline to the Runway 4/22 centerline separation, which meets ADG-II standards of at least 300 feet for ADG II with visibility minimums not lower than 3/4 of a mile. The location of Taxiway B is constrained by the adjacent development. The chart supplement for VRB indicates the use of Taxiway B for any aircraft with a wingspan larger than 79 feet is at the pilot's discretion.

There are three taxiway connectors: B, B1, and C. The entrance taxiway on the Runway 4 end is designated as Taxiway B. To comply with FAA standards, an alphanumeric designator should be added to this end connector. Taxiway B1 provides direct apron-to-runway access. Taxiway B1 or the stub connector between Taxiway B and the west ramp should be realigned to eliminate direct access, per FAA design standards. VRB has developable areas west of Runway 4/22, so extending Taxiway B the full length of Runway 4/22 should be considered. There is a run-up area at the south end of Taxiway B. When landing on Runway 4, Taxiway E is at least 2,000 feet from the runway end and can serve as an exit taxiway for smaller aircraft. When landing on Runway 22, taxiways C and B1 can serve as exit taxiways. The quicker an aircraft can exit a runway, the higher the runway capacity.

Taxiway C

Taxiway C is a full-length parallel on the south side of Runway 12R/30L. Taxiway C is 50 feet wide and meets TDG 3 standards. The Runway 4/22 and Taxiway A separation varies at 400 feet to 475 feet, which meets ADG-III standards of at least 400 feet. Consideration should be given to straightening Taxiway C with 400 feet of separation to eliminate the transition where it crosses Runway 4/22, an identified FAA hot spot. This would also open an additional 75 feet for the apron area south of Taxiway C.

There are eight taxiway connectors. Starting from the Runway 30L end, they are C1, C2, C3, C4, D, A, C5, and C6. C3 provides direct apron access from Piper Aircraft to Runway 12R/30L. Alternatives should be evaluated to eliminate the direct apron-to-runway access. The updated FAA taxiway design standards in FAA AC 150/5300-13B recommend rounding the corners of end taxiways to assist pilots in distinguishing between the runway and taxiway pavement. When Taxiway C is rehabilitated in the future, rounding the end should be considered.

Taxiway C2 can serve as a bypass taxiway to allow departures if an aircraft is on C1, waiting for an IFR flight plan clearance. However, Taxiway C2 does not connect with Runway 30L at a 90-degree angle and provides direct runway-to-apron access with Piper Aircraft. Alternatives should be evaluated to eliminate the direct apron-to-runway access while maintaining a bypass taxiway. Adding a taxiway connector on the Runway 12L end that can serve as a bypass taxiway should also be considered. There are engine run-up areas at both ends of Taxiway C.

Taxiway D

Taxiway D provides crossfield access from the Skyborne apron south of Runway 12R/30L to runways 12L, 30R, and 22 on the north side of the airfield. The portion of Taxiway D between Taxiway C and Runway 12R/30L is 75 feet wide and Taxiway D north of Runway 12R/30L is 35 feet wide, which meet TDG 2A standards. Because the portion north of Runway 12R/30L is used primarily to provide access to Runway 12L/30, which is designed for small aircraft only, the width of Taxiway D in this area is sufficient.

Taxiway E

Taxiway E is a partial parallel taxiway north of Runway 12R/30L. Taxiway E east of Taxiway D to the Runway 30L end is 50 feet wide. Taxiway E has lease separations preserving ADG-IV TLOFA. There are four taxiway connectors. Starting from the Runway 30L end, they are: E1, E3, D, and A. Taxiway E west of Taxiway D to Runway 4/22 is 40 feet wide. This portion of Taxiway E should be widened to 50 feet to serve TDG 3 aircraft. There is a compass calibration pad within the ROFA south of Taxiway E between taxiways D and A. Relocation of the compass calibration pad should be planned.

VRB has developable areas north of Runway 12R/30L, so extending Taxiway E the full length of Runway 12R/30L should be considered. Any extension of Taxiway E should be able to serve ADG III and TDG 3 aircraft.

Taxiway F

Taxiway F is a full-length parallel taxiway on the south side of Runway 12L/30R. The taxiway is 35 feet wide and meets TDG 2A standards. There is 240 feet of separation between Runway 12L/30R and Taxiway F, meeting ADG II standards with visual approaches. The chart supplement for VRB indicates use of Taxiway F for any aircraft with a wingspan larger than 79 feet is at the pilot's discretion.

There are five connectors: F, F1, F2, D, and A. At the time of the airport master plan, the Runway 30R end connector is designated as Taxiway F. To comply with FAA standards, an alphanumeric designator should be added to this end connector. F1 and F2 should be redesignated, as needed. There is an engine run-up area on each end of Taxiway F.

In summary, the following taxiway improvements should be evaluated in the alternatives analysis:

- Redesignate four taxiway end connectors (A and B on the Runway 4 end, A on Runway 22 and F on Runway 12L/30R).
- Eliminate direct apron-to-runway connections at A1, B1, C2, and C3.
- Realign Taxiway A2 at Runway 22, Taxiway C2, and Taxiway C3 to be perpendicular to the runway.
- Widen Taxiway E to 50 feet, from Taxiway D to Runway 4/22.
- Add a bypass taxiway at the Runway 12R end.
- Realign Taxiway C to a 400-foot runway centerline to taxiway centerline separation from Taxiway B to the end of Runway 30L.
- Extend Taxiway B to a full-length parallel taxiway.
- Extend Taxiway E to a full-length parallel taxiway.

3.11. Airfield Facilities

Airport Traffic Control Tower

The ATCT was relocated to the southeast corner of Cherokee Drive and Flight Safety Drive in 2003. This location was selected to provide better visibility by minimizing tower controllers looking into the sun. An ATCT needs a clear line of sight to all movement areas in the airfield, including runways and taxiways. During the inventory site visit and tenant interviews, the tower staff indicated no line of sight issues. A detailed ATCT siting study was conducted before the existing ATCT was constructed. Therefore, it is important that all planning for future airport facilities protect the ATCT's clear line of sight to all airfield movement areas.

Electrical Vault

At the time of this airport master plan, the airfield electrical vault is considered to be an adequate size and in good condition, including the equipment that controls the airfield systems. However, due to normal use, replacements and/or upgrades to equipment will be needed over the 20-year planning horizon. Electrical upgrades to existing equipment should be considered as part of any future airfield lighting, signage, or navigational aid projects and at the end of their useful life.

Navaids and Weather Equipment

At the time of this master plan, VRB was equipped with a rotating beacon, ASOS, and wind cones.

Rotating Beacon

The rotating beacon is north of Runway 12L/30R in the northeast quadrant of the airport. The equipment is accessed by a private dirt road available to airport staff and is surrounded by dense vegetation, which makes it difficult to maintain. Therefore, other locations should be evaluated during the alternatives analysis. Any beacon location considered needs to avoid the beacon shining into the ATCT cab.

ASOS

The ASOS is approximately 20 years old and is owned by the National Weather Service. The equipment is in the midfield area, adjacent to Taxiway E. Because of the location of the ASOS and the height restrictions associated with its siting, future midfield development is limited. To alleviate the siting restrictions in this area and expand the area available for development, relocating the ASOS is desired. Other locations for the ASOS should be considered in the alternatives analysis.

Wind Cones

A segmented circle and primary lighted wind cone are in the midfield area, adjacent to Taxiway E. Future midfield development in this location would need to be aware as to not obstruct the segmented circle and lighted wind cone from pilots in the air and on the ground. For best use and flexibility of the available space for future midfield development, the relocation of the segmented circle and wind cone is recommended. Supplemental wind cones are on the left side of each runway end. At the time of this master plan, all the supplemental wind cones are operational, except for the wind cone near the Runway 22 end. This supplemental wind cone must be replaced and should be coordinated with the Runway 22 end alternatives.

Compass Calibration Pad

The compass calibration pad is on the south side of Taxiway E and west of Taxiway D within the ROFA. It should be relocated outside of the ROFA. A compass calibration pad needs to be located away from materials that could create magnetic interference. The alternatives analysis will consider options to relocate the compass calibration page, per the FAA AC 150/5300-13B guidance that the center of the pad should be located[29]:

- a minimum of 600 feet from magnetic objects, e.g., parking lots, busy roads, railroad tracks, high voltage electrical transmission lines, or cables carrying direct current
- a minimum of 300 feet from buildings, fuel lines, and electrical or communication cable conduits, if they contain magnetic materials
- a minimum of 150 feet from runway and taxiway light bases, airfield signs, ducts, and grates for drainage, if they contain iron, steel, or ferrous materials
- clear of any critical area for electronic navaid facilities
- not penetrate the OFZ, safety areas, OFAs, etc.

3.12. Advanced Air Mobility

There has been a strong interest in the Florida market from operators of advanced air mobility (AAM) aircraft and vertiport developers. At the time of this airport master plan, VRB has a developer interested in building a vertiport at VRB. Therefore, the alternatives analysis should consider how AAM and a vertiport can be accommodating at VRB. *FAA Engineering Brief 105: Vertiport Design* provides guidance until the FAA releases an advisory circular.

3.13. Commercial Service Facilities

The requirements for commercial service facilities were based on the continued development of passenger service at VRB, meetings with airport management, site visits, and guidance in *FAA AC 150/5360-13A: Airport Terminal Planning*. The following sections outline the different factors considered, along with the associated assumptions, to derive the requirements for the basic functional areas of the commercial service facilities.

[29] FAA AC 150/5300-13B, dated March 31, 2022

Development of Passenger Service

The activity forecasts in Chapter 2 projected the level of air carrier operations and passenger enplanements expected through 2043, including potential high- and low-growth scenarios. These projections included the need to accommodate up to 55,500 enplanements and were based on the initial seven-month schedule from Breeze Airways when the forecasts were prepared. The schedules included flights using the airline's 118-seat Embraer ERJ-195 and 126-seat Airbus 220-300. Since then, operational and passenger data from Breeze became available, including flight schedules through the end of 2023. Additionally, Breeze has also reconfigured some of its Airbus 220-300 aircraft with 137 seats. Thus far, the passenger service activity has met or exceeded expectations, with no flight cancellations and a higher-than-expected average passenger flight load. This resulted in VRB recording 21,104 annual enplanements between February and August 2023, the first seven months of operations for Breeze. This study's activity forecasts projected 20,300 enplanements for that period.
During the inaugural months of operations in 2023, Breeze Airways did not offer service at VRB every day, and the schedule was limited to two flights per day (one in the morning and one in the afternoon). Between June and September 2023, there were no flights scheduled for Tuesdays and Wednesdays. Based on the latest published schedules from Breeze Airways, beginning in October 2023, two flights will be conducted every day. In November 2023 and running through the end of the year, a third flight is scheduled every Sunday, Tuesday, and Thursday, resulting in 17 flights per week. On the days with three flights, initially there are two flights in the morning and one in the afternoon. This shifts halfway through November to one flight in the morning and two in the afternoon for the rest of the year. No 2024 schedules were available at the time of this analysis.

Air Carrier Operations

Typically, due to the uncertainties associated with long-term activity forecasting, PALs are established to represent future points at which different facility improvements would be required. For commercial service facilities, PALs are usually based on passenger enplanement thresholds and, for some analyses, peak-hour enplanements. This demand-based approach allows certain improvements to correlate to when the future PAL is reached, rather than a set point in time.

A peaking analysis for the passenger service operations was not included in the activity forecasts chapter because there was no data.

In June 2023, the city passed a resolution to formalize the method that rates and charges were applied to any commercial airline operating at VRB. Within the resolution, block times were created for each air carrier operation. These were established due to the limited size and capacity of the terminal building with respect to life-safety requirements, as well as Transportation Security Administration (TSA) screening capability. At the airport director's discretion, the block times set two hours before and one hour after each flight to prevent the overcrowding of facilities with overlapping flights and to accommodate delays.

Given the circumstances at VRB, establishing PALs based on passenger enplanements does not provide much value. For example, under the current practices, the commercial terminal facilities could accommodate four flights a day (two in the morning and two in the afternoon) to include the block time before and after each flight. In theory, if the 126-seat Airbus 220-300 configuration operated by Breeze Airways was scheduled for each of the four daily flights and the average 80% percent load factor from the activity forecasts applied, VRB could realize nearly 142,000 annual enplanements. This is 2 1/2 times the passenger enplanements projected for 2043 and 60% more than the high-growth scenario envisioned. Therefore, in lieu of PALs, the commercial service facilities for VRB are more dependent on the number of overlapping or simultaneous flights, as well as the desire to continuously improve the overall passenger level of service. For some of the terminal building areas, this was evident during the few occasions when a departure delay resulted in an overlap of two flights. During these conditions, the problems experienced were primarily due to the limited space in the secure passenger holdroom but also in other areas, such as the outbound baggage screening and make-up areas.

Terminal Building Requirements

As described in FAA AC 150/5360-13A, master plans usually only include basic information, which can be applied to a more detailed terminal planning process when needed. Given the unique characteristics of the passenger service activity at VRB, requirements for the terminal building were based on a high-level evaluation of the space required to increase the level of passenger service, as well as the potential to accommodate more than one flight simultaneously. The functional elements of the terminal building have been grouped into those needed for the departing and arriving passenger functions. **Table 3.12** provides details on these functional elements, as well as the improvements being designed for construction in 2024 to improve the level of service.

TABLE 3.12: EXISTING AND SHORT-TERM TERMINAL BUILDING FACILITIES

	Existing		After 2024 Improvements	
Departing Passengers				
Check-In Counters	66 SF	2 positions	66 SF	
Check-In Queuing	344 SF	1 queue	576 SF	Relocates rental cars
Outbound Baggage Screening and Make-Up	343 SF	1 EDS machine Bag make-up outside	343 SF	
Passenger Security Screening Equipment	446 SF	1 TSA lane	446 SF	
Passenger Security Screening and Queuing	745 SF	1 queue	745 SF	
Holdroom	1,742 SF	120 seats	2,223 SF	Additional 481 SF
Restrooms (secure side)	423 SF		423 SF	
Arriving Passengers				
Baggage Claim and Arrivals Lounge	0 SF	Bag claim outside	1,027 SF	Bag claim outside
Restrooms (nonsecure side)	0 SF		440 SF	
Rental Car Queuing	87 SF		65 SF	New rental car space
Rental Car Counter	145 SF		125 SF	New rental car space
TOTAL SPACE	**4,341 SF**		**6,479 SF**	

Notes: All areas have been estimated based on available drawings for past and future terminal improvements. EDS: explosive detection screening; SF: square feet.
Source: ESA, 2023 analysis.

As shown in Table 3.12, the improvements planned for 2024 will increase the passenger terminal facilities by 50% to achieve the goal of improving the level of passenger service.

Departing Passenger Spaces

The general spaces required for departing passenger services are summarized in the following sections. It should be noted that this high analysis does not include every space required, such as the areas for offices, storage, janitorial functions, and the mechanical and structural components of the building. These will be incorporated as part of the actual design.

Check-In Areas

The approximate processing time per passenger for a single, traditional check-in counter is between two and five minutes. This varies, based on whether the passenger needs full check-in services, just a boarding pass, or other assistance. As such, the two positions at VRB have the potential to check in up to 60 passengers per hour. The check-in counters open two hours before a flight's scheduled departure time. With a range of 126 to 137 seats on the Airbus 220-300, there is typically enough time to check in passengers, given that some passengers arrive two hours before their flight, the flights are not always full, and a certain number of passengers will check in online. Additional check-in capabilities should be considered to increase the level of service and would be required if processing passengers overlaps for more than one flight.

The queuing area for passengers checking in is limited to between the check-in counters and the rental car facilities in the terminal building lobby. This area is frequently congested before a flight, because the check-in counters are near the front doors of the terminal, the queuing line for the passenger security screening, and the general circulation to other areas of the terminal building. For lower-activity terminals, a general rule is to provide a queuing area 35 feet deep for at least the width of the check-in counter. For the two check-in positions at VRB, this would be approximately 400 square feet. As shown in Table 3.12, the area would increase from 344 to 576 square feet, providing more queuing space. This space should be at least 1,000 square feet to support four check-in positions (with lobby circulation) to process passengers of more than one flight with overlapping times.

Outbound Baggage Screening and Make-Up

The type of explosive detection screening (EDS) equipment at VRB can screen approximately 225 bags per hour. As such, the single unit is adequate for processing the 126- to 137-seat Airbus 220-300 flights, considering that not every passenger will check a bag. A second unit may be required if two flights have departure times within an hour of each other. In addition to a higher screening rate, a second EDS unit would provide redundancy to avoid hand inspections of each checked bag if the single unit went offline.

Once screened, outbound baggage is loaded onto airline carts for the departing aircraft. While this function begins inside the building, there is no dedicated outbound baggage make-up area. The airline carts are outside, in a secure area adjacent to the terminal. Ideally, the space at VRB should be doubled to enable a portion of the baggage make-up to occur inside the building prior to being loaded onto the carts. To accommodate overlapping flights, the overall space for outbound baggage screening and make-up would also need to double if a second EDS unit were added. The outside areas used by the carts will be significantly improved in 2024 to provide a wider paved path and a looped route, versus the current configuration of one way in and one way out.

Passenger Security Screening

The average throughput for the type of security screening at VRB is approximately 150 passengers per hour. As such, the single TSA passenger security screening lane is adequate to process the passengers and flight crews for the 126- to 137-seat Airbus 220-300 flights. However, a larger overall security screening area is desired to provide additional space for the TSA staff and their functions, as well as a higher level of passenger service. Given the processing rate of the TSA lane, a second lane would not be required, even for two flights departing within a short period of each other. However, the TSA and passenger screening areas should be increased approximately 50% to better accommodate two overlapping flights.

Holdroom

The holdroom area provides approximately 120 seats in just under 1,750 square feet of space. This area will be expanded by nearly 500 square feet as part of the 2024 improvements, which would provide additional space and seating. While certainly an improvement for the level of service, additional space would still be required to accommodate the passengers of two overlapping flights who have cleared security.

There are two common ways to calculate holdroom requirements. One is to apply a standard area based on the maximum aircraft size served. The approximate area used for narrow-body aircraft like the Airbus 220-300 is 2,500 square feet. The other is to estimate the demand based on the estimated gate requirements in the peak hour of operation. For planning purposes, up to 5,000 square feet should be planned to provide enough secure passenger holdroom space to accommodate all the passengers of two overlapping flights. Additionally, this area would account for the space required to expand the restroom facilities and provide concessions for passengers on the secure side of the terminal. Concessions not only improve the level of passenger service, they create an opportunity for increased revenue generation. Ultimately, airport management may work with a concessionaire to determine appropriate concessions based on the airport's passenger profile. At smaller terminals such as VRB, this typically would be a small shop or kiosk with grab-and-go types of food, beverages, and other sundries.

Arriving Passenger Spaces

The general spaces required for arriving passenger services are summarized in the following sections. As with the departing passenger areas, the following sections do not include an assessment of every space required, just the major functional areas.

Baggage Claim and Arrival Lounge

The baggage claim area is outside the terminal building. The airline carts pull up to an area where passengers who have exited the secure side of the commercial terminal facilities can retrieve their bags. This outside baggage claim area and the sidewalks between it and the terminal building will be improved as part of the 2024 terminal improvements. These will primarily consist of expanding and covering the areas for passengers.

Additionally, part of the building will be renovated during the 2024 improvements to provide inbound passengers with a dedicated arrivals lounge. This area will include approximately 1,000 square feet of nonsecure circulation space for arriving passengers and people meeting them. The renovations also include new restroom facilities and an area to relocate the rental car facilities, which are currently in the terminal building lobby.

While the new arrivals lounge space and its current features will increase the level of service for passengers, ultimately, the inbound terminal facilities need to incorporate the baggage claim area as part of the structure. For planning purposes, doubling the circulation space would enable a single baggage device to be integrated into the terminal facilities. Space to accommodate a second rental car company in the future should also be considered.

Summary of Terminal Building Requirements

Table 3.13 provides an overview of the space required for the different functional elements of the terminal building necessary to support overlapping flights with a high level of passenger service. As with the current terminal facilities, it is assumed that any future terminal improvements will meet local building codes, including Americans With Disabilities Act provisions. The 12,430 square feet of space identified is nearly twice as much as what will be available once the 2024 terminal improvements are complete. This space and the features required are addressed further in the alternatives analysis.

TABLE 3.13: TERMINAL BUILDING REQUIREMENTS TO SUPPORT OVERLAPPING FLIGHTS

	Space and Features Required	
Departing Passengers		
Check-In Counters	150 SF	4 positions
Check-In Queuing	1,000 SF	2 queues
Outbound Baggage Screening and Make-Up	1,500 SF	2 EDS machines Bag make-up inside
Passenger Security Screening Equipment	700 SF	1 TSA lane with more space
Passenger Security Screening and Queuing	1,200 SF	1 queue with more space
Holdroom	5,000 SF	For 2 aircraft departures
Restrooms (secure side)	0 SF	Included with holdroom
Arriving Passengers		
Baggage Claim and Arrivals Lounge	2,000 SF	Bag claim inside
Restrooms (nonsecure side)	500 SF	
Rental Car Queuing	130 SF	2 rental car companies
Rental Car Counter	250 SF	2 rental car companies
TOTAL SPACE	**12,430 SF**	

Source: ESA, 2023 analysis.

Airside Facilities for Commercial Aircraft

Runway 12R/30L and parallel Taxiway C are designed to accommodate a majority of the passenger airline narrow-body fleet, including the Embraer ERJ-195 and Airbus 220-300 aircraft operated by Breeze Airways. Therefore, only the number of aircraft parking positions is addressed for the airside facilities necessary to support commercial aircraft operations.

During the preparation of this master plan, a second aircraft parking position was delineated on the commercial service hardstand apron immediately northwest of the terminal building. The parking positions can simultaneously accommodate two of the larger Airbus 220-300 aircraft. As such, no additional parking positions are required to accommodate the activity projected.

3.14. General Aviation Facilities

VRB, with more than 200 based aircraft and annual operations exceeding 133,000, supports a variety of GA traffic. Based on the historical activity and projected growth in the forecast chapter, there is a high demand for aeronautical development, including a hangar waiting list for 90 aircraft.

The flight schools have 75 aircraft based at VRB. Their single-engine aircraft are tied down on the apron within their leasehold when not in use. Therefore, they were omitted from the GA future facility development calculations. Hangar capacity at VRB is 100%. Almost all based aircraft, except for the single-engine aircraft used by the flight schools, are or are desired to be stored in hangars. Therefore, the GA facility development calculations are based on the assumption that all future based aircraft will require hangar storage. The following section provides additional information on the calculations used to determine the future GA development.

Aircraft Hangar Requirements

There are various types and sizes of hangars at VRB to support the high aeronautical demand. These hangars include small and medium T-hangars, executive hangars, and large corporate hangars. At the time of this airport master plan, VRB has multiple private hangar developments in process that will provide 32 T-hangars, 10 small box hangars, three medium to large hangars totaling approximately 54,800 square feet and six large box hangars totaling 86,500 square feet. These ongoing projects will be included to help meet the GA facility demand over the planning period but fall short of addressing the full forecasted demand. Future alternative concepts will depict areas to be reserved for T-hangars, small box hangars, and large box hangars for flexibility to meet the forecasted demand, based on the hangar square footage required to meet the demand, as shown in **Table 3.14**.

To project the future hangar needs, the total future based aircraft exceeding flight school aircraft were identified. The flight school aircraft were assumed to grow by 10% during the 20-year forecast period. These future based aircraft were then identified by size, based on the aviation forecasts. There are some aircraft on the VRB basedaircraft.com list that are registered at other airports or at Piper. These were excluded from the future GA facility development requirements. After identifying the total future needs, the existing hangar facilities were subtracted to identify the number of new hangar facilities needed. For planning purposes, it was assumed that the single-engine aircraft would require T-hangar space and larger aircraft would be housed in box hangars. To project the future square footage for box hangars, 3,000 square feet was used for multiengine aircraft, based on the King Air 200 as a representative multiengine aircraft. Using the Dassault Falcon as a representative aircraft, 7,100 square feet was used for jets, and 2,000 square feet was used for helicopters.

As depicted in Table 3.14, an additional 68 hangars for single-engine aircraft, 45,000 square feet of multiengine hangars, 184,600 square feet of jet hangars and 18,000 square feet for helicopters will be required during the planning period. These are the total future needs. The private hangar development in process will be considered in the alternatives analysis when identifying options to meet these future hangar needs at VRB. These hangar facilities should be implemented to align with the PALs.

TABLE 3.14: SUMMARY OF FUTURE GA HANGAR FACILITY DEVELOPMENT

	Based Aircraft		
Total 2022	216		
Skyborne Airline Academy	44		
Paris Air	31		
2022 Total Aircraft in Hangars	**141**		
Total 2043	334		
Skyborne Airline Academy	52		
Paris Air	37		
2043 Total Aircraft in Hangars	**245**		
	Number of Aircraft		
Aircraft Type	**2022**	**2043**	**Net Difference**
Single-Engine	70	138	68
Multiengine	38	53	15
Jet	16	42	26
Helicopter	3	12	9
Aircraft Registered at Another Airport	10	10	0
Aircraft at Piper	4	4	0
2043 Future Hangar Needs			
T-Hangars (Single-Engine)	Total Units to Meet Future Demand		68 units
Small Box Hangar (Multiengine)	Additional Multiengine Aircraft Square Footage		15 aircraft 45,000 SF
Large Box Hangars (Jets)	Additional Jet Aircraft Square Footage		26 aircraft 184,600 SF
Box Hangar (Helicopter)	Additional Helicopters Square Footage		9 Helicopters 18,000 SF

Aircraft Parking Aprons

Except for the commercial service parking positions, the apron facilities at VRB are within tenant leaseholds. During the inventory process, no tenants identified the need for additional apron area for regular operations. During special events and around the winter holidays, there are times when additional aircraft parking areas are needed. At these times, the airport has identified overflow areas, including the engine run-up pads and some paved areas along taxiways. As described in the RVZ section, the other facility need is to minimize aircraft parking within the RVZ when the tower is closed, which will be addressed as part of the alternatives analysis.

3.15. Other Airport Support Facilities

Aircraft Rescue and Firefighting

Fire Station No. 3 is on the southwest side of the airport, adjacent to 43rd Avenue near the Runway 4 end. With the start of commercial service operations, VRB upgraded to an ARFF Index B, which includes air carrier aircraft at least 90 to 126 feet long. VRB has three vehicles, including the recently acquired 1993 Oshkosh T-1500. VRB meets the FAA ARFF requirements of a three-minute response time to the midpoint of the furthest commercial service runway. Therefore, the ARFF station meets FAA requirements, and no changes are needed. Based on the aviation forecast, no change in ARFF index is anticipated during the planning period. There is a need to redevelop the ARFF road due to unsuitable grades and excessive bank angles. Therefore, evaluating modifications to the ARFF road should be considered during the alternatives analysis.

As long as there are fewer than five average daily departures by the A220-300, largest aircraft regularly operated at VRB, the current ARFF Index B is sufficient. Should operations increase to an average of five or more daily departures, by the A220-300 or larger aircraft then an increase to ARFF Index C would be required. This increase in ARFF Index would require larger ARFF vehicles resulting in the need for a larger ARFF station to house the vehicles. The existing Fire Station No. 3 serves as the ARFF rescue to VRB, as well as emergency response to the surrounding community. Therefore, to meet the need for future ARFF Index C and not impact any existing emergency response, a standalone ARFF station that can accommodate ARFF Index C to serve VRB should be planned.

Airport Operations Facility

The airport operations facility was completed in 2014. The building is approximately 8,000 square feet and accessed via a security gate south of the west industrial area off Flight Safety Drive. This facility stores large vehicles, mowers, and equipment owned by the airport. Automobile parking is on the east side of the building and includes 10 standard spaces. At the time of this master plan, additional storage space for airport operations equipment is needed. The alternatives analysis will consider opportunities to reserve space to expand the airport operations facility.

Fuel Farms

There are seven active fuel farms, including two self-serve fuel farms, at VRB. The fuel farms provide a fuel capacity of 65,000 gallons of Jet A, 49,000 gallons of 100LL, 500 gallons of autogas, and 500 gallons of diesel. There are three fuel farms on the west ramp, operated by Corporate Air, Paris Air, and Continental Jet. Three of the remaining four fuel farms are near the terminal area. These fuel farms are operated by Sun Aviation and Skyborne. One fuel farm is just outside the AOA at the corner of Cherokee Drive and Piper Drive and provides a driveway for tractor trailer access. Davis Development on the north ramp also has a fuel system for its operations. At the time of this airport master plan, the fuel farms are in good working condition and meet airport needs. All the fuel farms are operated by private entities. No requests to reserve additional areas for fuel farms were received from these tenants during the inventory process.

Alternate Fuel Systems

With increasing technology, electric aircraft continue to make advancements in the aviation industry. During the alternatives analysis, available space should be protected to provide charging stations for electric aircraft within the existing airfield and consider other opportunities to accommodate electric aircraft that support the aviation industry's AAM initiative. Hydrogen power for aircraft is also under development. This may require future storage for hydrogen for fueling aircraft.

Perimeter Fence and Security Access Gates

Perimeter fencing and security updates were completed in late 2019. The 52 security gates on VRB are shown on **Figure 3.18**. The 2019 improvements included the partial removal of the fence, removal of manual and pedestrian gates, and upgrades to 8-foot-high chain-link fence with three strands of barbed wire. These improvements took place in the terminal area, north ramp, and west airfield. The perimeter fence on the north side of the airfield along the tree line was upgraded to a height of 10 feet. This consisted of 2 feet below-ground, 7 feet above-ground and 1 foot of barbed wire. There is a need to upgrade the perimeter fence on the south side of the airport, similar to the improvements completed to the north side, to help prevent wildlife access. Therefore, perimeter/wildlife fence alternatives are recommended during the alternatives analysis.

Additional security cameras are required to enhance the security at airport facilities. Security cameras around the T-hangars and a camera at the security gate off Flight Safety Drive is needed, at a minimum. Also, additional security cameras to provide visibility of the taxilanes between the T-hangars is needed.

3.16. Landside Facilities

Landside facilities, including vehicle ground access, pedestrian access, and automobile parking, are essential to efficient movement around an airport.

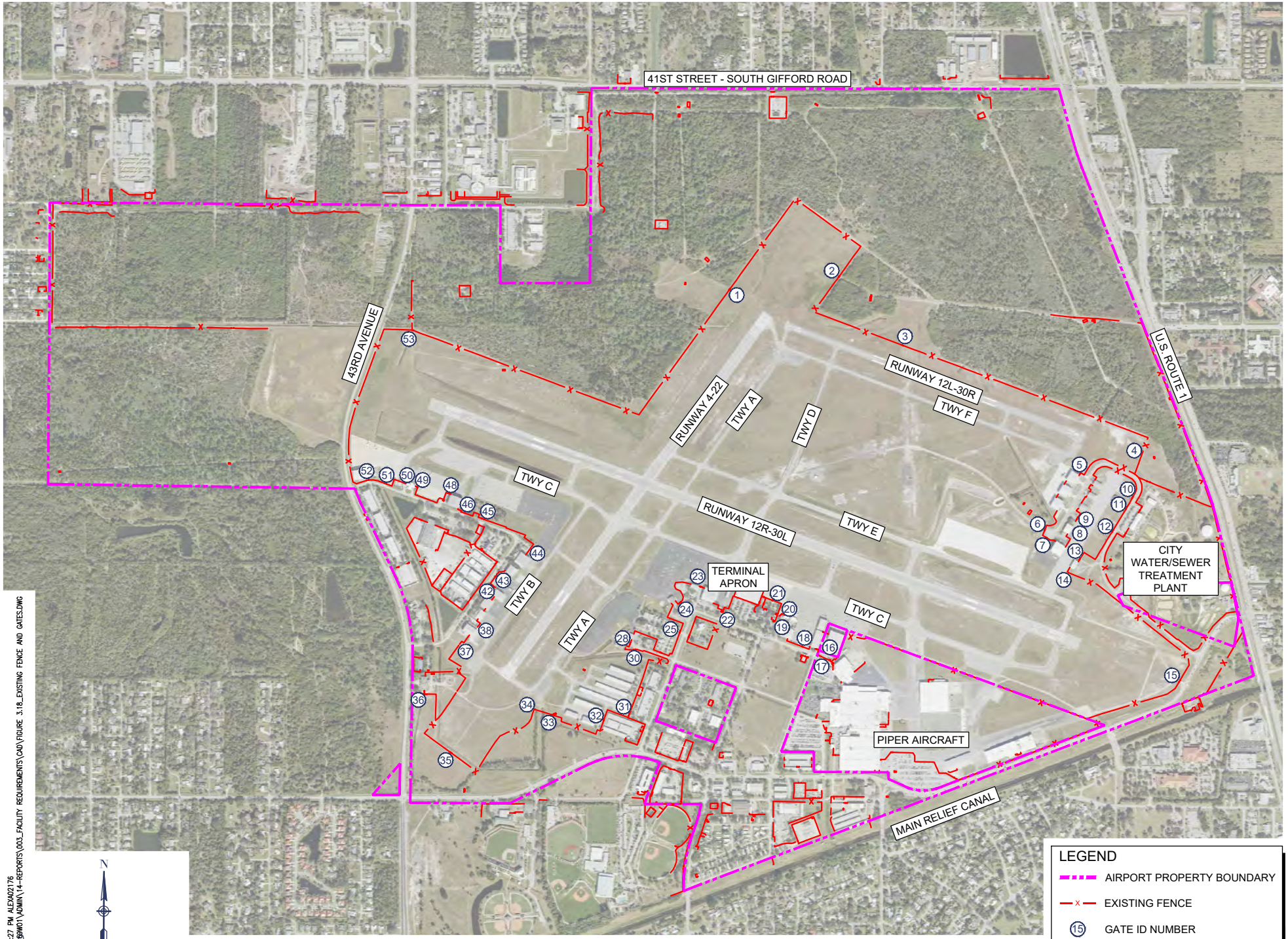
Vehicle Ground Access

As shown on **Figure 3.19**, four primary vehicle access roads surround VRB. These surrounding roads include 41st Street to the north, U.S. 1 to the east, Aviation Boulevard to the south, and 43rd Avenue to the west. The city of Vero Beach plans to widen Aviation Boulevard from 43rd Avenue to U.S. 1. At the time of this airport master plan, an ongoing project development and environment (PD&E) study is evaluating improvements to the intersection of State Road 5/U.S. 1 and Aviation Boulevard. This intersection is within the Runway 30L RPZ. In coordination with the airport, the PD&E study has eliminated all alternatives that included an overpass or underpass, so as not to adversely impact airport operations.

Within airport property, VRB owns the roads and right of way. This allows the airport to modify the roadway system if needed to support the expansion of airport operations. VRB is responsible for the maintenance of the roads within airport property. The roads are public use and used primarily for aviation-related access. Some of the city-planned improvements to Airport Boulevard are within the airport-owned portion. Depending on the funding source, a change of ownership of the right of way may be required. Because VRB is a surplus property airport (deeded from the federal government after military use ceased), any proposed change of ownership will require a land release by the FAA.

Pedestrian Access

Crosswalks from the long-term parking lots south of Cherokee Drive provide passengers access to the terminal. To assist with the demand of additional passengers and visitors caused by increased commercial service operations, pedestrian access improvements, including lighted crosswalks and signs, should be considered.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

LEGEND

- AIRPORT PROPERTY BOUNDARY
- EXISTING FENCE
- 15 GATE ID NUMBER

N

0 1400

GRAPHIC SCALE IN FEET

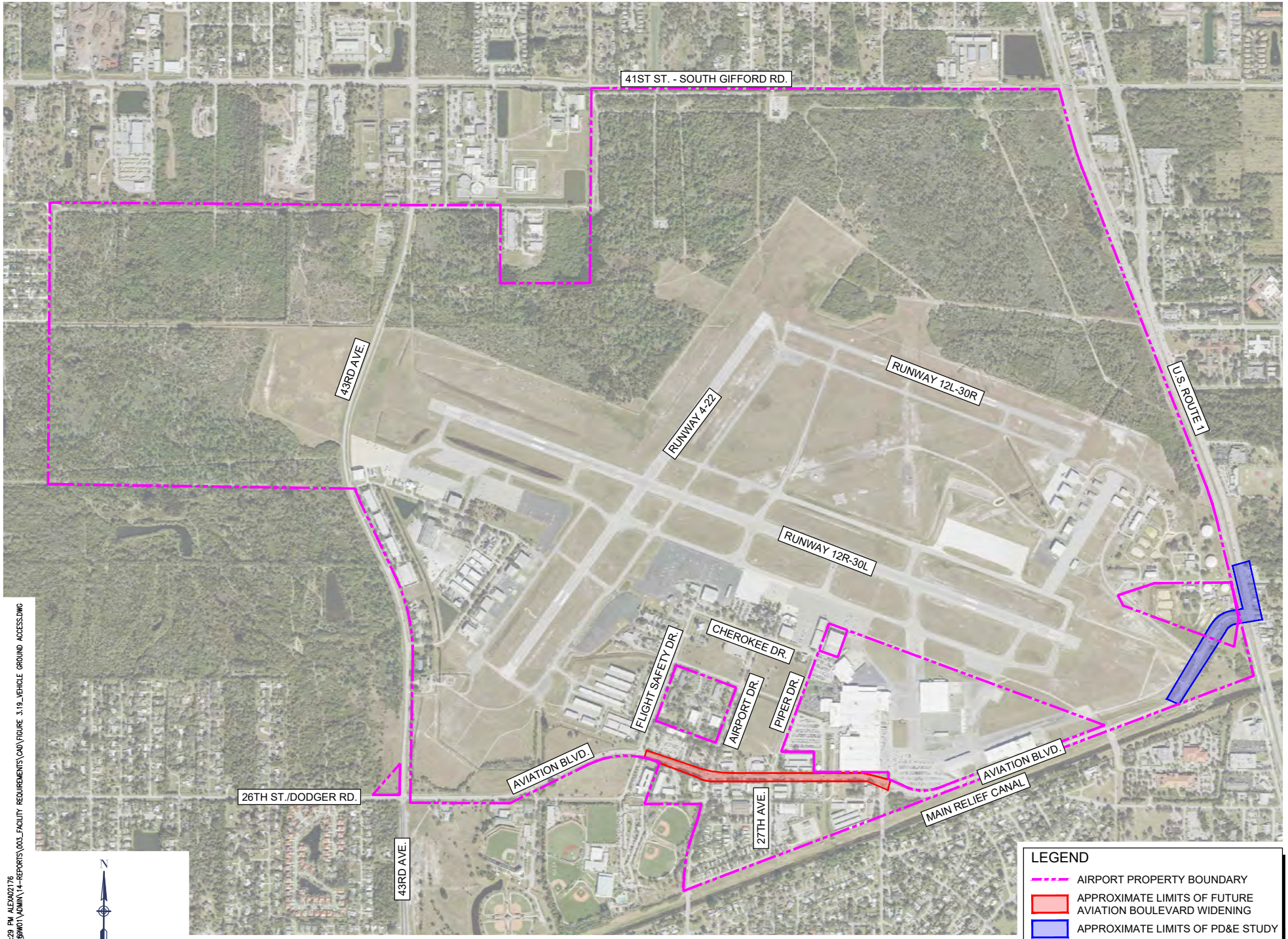
AUG 12, 2024 1:27 PM ALEXA02176
I:\20J08S\20A00869W01\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.18_EXISTING FENCE AND GATES.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

EXISTING PERIMETER FENCE AND SECURITY GATES

DRAWN BY:	JA	FIGURE 3.18
CHECKED BY:	SZ	



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 1:29 PM ALEXA02176
I:\20J08S\20A008WO1\ADMIN\14-REPORTS\003_FACILITY REQUIREMENTS\CAD\FIGURE 3.19_VEHICLE GROUND ACCESS.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

SURROUND VEHICLE GROUND ACCESS ENHANCEMENTS

DRAWN BY: JA

CHECKED BY: SZ

FIGURE 3.19

Automobile Parking

The primary automobile parking areas are around the terminal building in short- and long-term parking areas. Additional automobile parking areas are adjacent to the FBOs, Corporate Air and Sun Aviation, and the flight training schools, Skyborne and Paris Air. Vehicle parking for the city hangars and T-hangars in the general aviation area are generally inside or adjacent to the hangars.

FIGURE 3.20: SHORT-TERM PARKING

Automobile Parking Near Terminal Area

Automobile parking is available adjacent to the terminal building. Parking is divided into two areas: short- and long-term parking. As shown on **Figure 3.20**, short-term parking is north of Cherokee Drive, adjacent to the terminal building. This area has 111 parking spaces, including standard, compact, and accessible spaces.

As shown on **Figure 3.21** and **Figure 3.22**, long-term parking is south of Cherokee Drive and divided into two areas: Lot A and Lot B. Lot A has 51 spaces and Lot B has 82 spaces, totaling 133 long-term parking spaces. The pavement is in good condition, requiring only routine maintenance. A parking study conducted for the Breeze Airways' operations indicated 150–200 additional parking spaces may be needed to support passenger service. The alternatives analysis should consider additional areas for parking to meet the needs of commerical service operations. Other businesses at VRB and Piper Aircraft have their own designated parking areas. Piper Aircraft has expressed the need to VRB for additional automobile parking near their facility. With the initiation of passenger service, provisions for taxi, transportation network companies, and other ground transportation options should be considered in the alternatives analysis.

FIGURE 3.21: LONG-TERM PARKING – LOT A

FIGURE 3.22: LONG-TERM PARKING – LOT B

Automobile Parking Near FBOs

Automobile parking is available at both the FBOs at VRB. The FBOs are Corporate Air and Sun Aviation. Corporate Air is on the west side of the airfield, and Sun Aviation is east of the terminal building. The FBOs have automobile parking areas available within their leaseholds that are outside the control of the airport. Potential areas that could be available for additional lease space for tenants should be identified during the alternatives analysis. The next subsections provide additional automobile parking details for both FBOs.

Corporate Air

Landside access to Corporate Air is by Airport West Drive via 43rd Avenue. Corporate Air has a parking area west of the FBO terminal that includes 13 standard parking spaces and two accessible spaces, as shown on **Figure 3.23**. During the inventory process, it was observed that the grass area across the street from the FBO terminal building is used for overflow parking. An automobile parking area should be considered to accommodate the overflow parking.

Sun Aviation

Sun Aviation is on the east side of the terminal building and accessed via Cherokee Drive. Sun Aviation has 43 parking spaces south of the FBO terminal, as shown on **Figure 3.24**. Sun Aviation did not indicate a need for additional parking. However, at the time of this airport master plan, Hertz would use the grass area south of Cherokee Drive for overflow parking. Additional rental car parking should be considered in the alternatives analysis.

Nonaeronautical Parking and Connectivity

VRB is in the process of adding 26 parking spaces and pedestrian walkway improvements to the north side of the automobile parking along 26th Street/Dodger Road between Airport Drive and Bonanza Lane to better support the businesses in this area. This will improve the connection of the area to the terminal for pedestrians or bicycles.

FIGURE 3.23: CORPORATE AIR AUTOMOBILE PARKING

FIGURE 3.24: SUN AVIATION AUTOMOBILE PARKING

3.17. Nonaeronautical Facilities

Based on the aviation forecasts, the aviation use at VRB is projected to continue to grow. During the alternatives analysis, areas will be identified that could accommodate aeronautical development within the airport property. Areas that must be protected, such as city wells or environmentally sensitive areas, will be taken into account when development is being considered. After that occurs, areas without potential airfield access could be considered for nonaeronautical use.

As detailed in Section 1.20, VRB houses a wide range of nonaeronautical development. Nonaeronautical development has the potential to provide additional revenue to the airport to diversify the revenue stream and help support airport operations. The opportunity for other types of nonaeronautical development, compatible with airport operations, should be considered in the alternatives analysis after all aeronautical needs are met.

3.18. Facility Requirements Summary

The section has identified opportunities to improve the facilities at VRB to better meet current and future demands. Within the 20-year planning period, the activity at VRB is forecast to continue to grow. Based aircraft are projected to increase from slightly more than 200 aircraft to more than 300 aircraft, with growth in all sizes of based aircraft. To accommodate this growth, additional hangar facilities of various sizes will be needed. Passenger enplanements are projected to increase to more than 50,000, which will require additional terminal building, ground transportation, and parking facilities. Operations are projected to increase to more than 300,000 annual operations, higher than the pre-COVID-19 peak. The airfield facilities will need to be maximized through runway and taxiway improvements to avoid significant operational delays as activity increases. Alternatives will be developed to identify options to meet these demands, starting with the airfield and progressing toward potential nonaeronautical development. In addition to considering the facility requirements, the alternatives will consider environmental factors, as identified in the environmental overview.

4. Environmental Overview

4.1. Introduction

FAA AC 150/5070-6B, Change 2: Airport Master Plans encourages the consideration of environmental factors in airport master planning to "help the sponsor thoroughly evaluate airport development alternatives and to provide information that will help expedite subsequent environmental processing." Also, FDOT's 2021–22 *Guidebook for Airport Master Planning* notes that there are different environmental processes for projects that are funded by the FAA or FDOT. However, both agencies recognize that it is not the intent of a master plan to complete the federal and state environmental review processes. Instead, the information should provide a foundation for future environmental clearances and evaluations that may be required.

This chapter provides an overview of known environmental resources that will be considered during the identification and evaluation of development alternatives in this master plan. The environmental resources discussed in this chapter include many of those identified in *FAA Order 5050.4B: National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* and *FAA Order 1050.1F: Environmental Impacts: Policies and Procedures*. In addition to referencing previous studies and data, a site visit was conducted by a field biologist and wetland scientist in August 2023 to verify information documented in the following sections. This overview does not constitute an environmental assessment; instead, it is intended to serve as a basis for preparing NEPA reviews that are required by the FAA for advancing future projects at VRB.

4.2. Air Quality

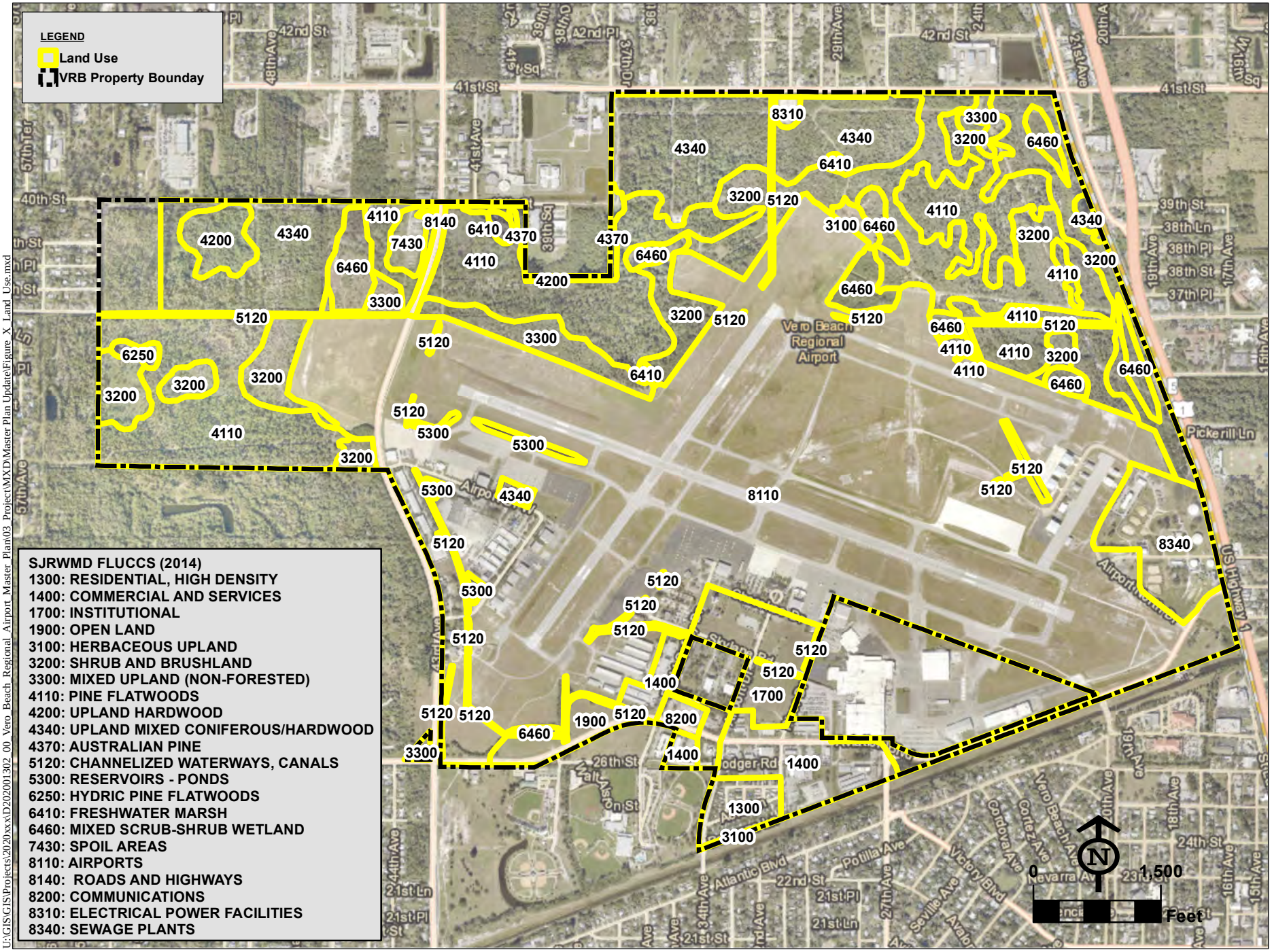
The federal Clean Air Act, as amended, required the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for principal air pollutants considered harmful to public health and the environment. Areas where the NAAQS are not met are designated as "nonattainment." Indian River County is classified as "attainment" for all criteria air pollutants listed in the NAAQS. Emission sources at VRB, which are typical of airports, include aircraft engines, ground support equipment, auxiliary power units, motor vehicles, the temporary use of construction equipment, and various stationary sources, such as generators.

The existing and projected activity for VRB, in conjunction with Indian River County's attainment status, indicates that continued operation of the airport is not likely to substantially affect air quality, exceed thresholds that require detailed air quality analyses, or require conformance with a state implementation plan. Any future airport projects that require NEPA review will consider the project's effect on air quality. Certain projects and tenant activities, such as operating paint booths, must comply with applicable federal, state, and local regulations and permitting requirements.

4.3. Biological Resources

Biotic Communities and Vegetation

VRB covers approximately 1,650 acres. The land use and cover types have been mapped for VRB using the St. Johns River Water Management District (SJRWMD) Florida Land Use, Cover, and Forms Classifications Systems (FLUCCS) data for Indian River County. The FLUCCS communities are listed in **Table 4.1** and depicted on **Figure 4.1**.



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Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2023, SJRWMD 2014, Hanson 2023, ESA 2023

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FIGURE 4.1
LAND USE

TABLE 4.1: FLORIDA LAND USE, COVER AND FORMS CLASSIFICATION SYSTEMS (FLUCCS) COMMUNITIES AT VRB

Land Use Code	Description
1300	Residential, High-Density
1400	Commercial and Services
1700	Institutional
1900	Open Land
3100	Herbaceous Upland Nonforested
3200	Shrub and Brushland
3300	Mixed Upland Nonforested
4110	Pine Flatwoods
4200	Upland Hardwood
4340	Upland Mixed Coniferous/Hardwood
4370	Australian Pine
5120	Channelized Waterways, Canals
5300	Reservoirs – Ponds
6250	Hydric Pine Flatwoods
6410	Freshwater Marshes
6460	Mixed Scrub-Shrub Wetland
7430	Spoil Areas
8110	Airports
8140	Roads and Highways
8200	Communications
8310	Electrical Power Facilities
8340	Wastewater Treatment/Sewage Plants

Sources: SJRWMD 2014 and ESA 2023.

Potential impacts to biotic communities are regulated by a variety of agencies at the federal, state, and local level, depending on the project type and resource affected. In Indian River County, local agencies support development review, but federal and state agencies maintain jurisdiction over the resource categories discussed in this section.

Wildlife, Listed Species, and Essential Fish Habitat

Wildlife Hazard Management

An FAA-compliant wildlife hazard assessment (WHA) was completed in 2014, and a wildlife hazard management plan (WHMP) was approved by the FAA in October 2015. A habitat conservation plan was completed in 2016 to satisfy the permitting requirements for the implementation of the WHMP. The WHMP was updated after the most recent FAA wildlife inspection was completed in December 2019. As detailed in the WHMP, current management and future airport improvements should be designed to minimize wildlife hazards to the greatest extent possible.

Listed Species

In addition to assessing impacts under NEPA, airport improvement projects are subject to other federal and state laws associated with wildlife and protected species. Most notable is the federal Endangered Species Act, which protects and recovers imperiled species and the habitats on which they depend. The FAA and/or other federal agencies that may be involved with airport improvement projects at VRB are required to determine if their action(s) would affect listed species.

Depending on the potentially impacted habitat or species affected, coordination with the U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA) fisheries, and/or the Florida Fish and Wildlife Conservation Commission (FFWCC) may be required. In cases in which wetlands are also impacted, this coordination typically occurs in conjunction with the wetland permitting process.

A review of publicly available resources, such as the Florida Natural Areas Inventory (FNAI) and previous environmental studies, including the WHA and WHMP, identified the VRB property and surrounding area as potentially having suitable habitat for federal- and state-listed wildlife. **Table 4.2** provides the listed species for which suitable habitat may exist or for which there is a possibility of occurrence on or adjacent to the airfield.

TABLE 4.2: FEDERAL- AND STATE-LISTED WILDLIFE SPECIES IN THE VICINITY OF VRB

Common Name	Scientific Name	USFWS/NOAA Listings	FFWCC Listings
Fish			
Opossum pipefish	Microphis branchyurus	SC	
Mangrove Rivulus	Rivulus marmoratus	SC	
Reptiles			
American alligator	Alligator mississippiensis	T(S/A)	T(S/A)
American crocodile	Crocodylus acutus	T	T
Eastern indigo snake	Drymarchon couperi	T	T
Gopher tortoise	Gopherus polyphemus		T
Pine snake	Pituophis melanoleucus		T
Birds			
Florida scrub jay	Aphelocoma coerulescens	T	T
Burrowing owl	Athene cunicularia	T	T
Audubon's crested caracara	Polyborus plancus audubonii	T	T
Red-cockaded woodpecker	Dryobates borealis	E	T
Little blue heron	Egretta caerulea		T
Reddish egret	Egretta refescens		T
Tricolored heron	Egretta tricolor		T
American oystercatcher	Haematopus palliates		T
Bald eagle	Haliaeetus leucocephalus	*	*
Eastern black rail	Laterallus jamaicensis spp. Jamaicensis	T	T
Wood stork	Mycteria americana	T	T
Snail kite	Rostrhamus sociabilis	E	E
Black skimmer	Rynchops niger		T
Least tern	Sternula antillarum		T
Mammals			
Florida panther	Puma concolor coryi	E	E
Southeastern beach mouse	Peromyscus polionotus niveiventris	T	T

This information is provided as a guide to project planning and is not a substitute for site-specific surveys. Such surveys may be needed to assess species' presence or absence, as well as the extent of project effects on listed species and/or designated critical habitat.

E = endangered; T = threatened; SC/SSC = species of special concern; C = candidate for list at the federal level by USFWS; T(S/A) = threatened (similarity of appearance) to American crocodile - Crocodylus acutus

*Federal protection under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act

Candidate species receive no statutory protection under the Endangered Species Act. The FWS encourages cooperative conservation efforts for these species because they are, by definition, species that may warrant future protection under the EPA.

Sources: USFWS, FFWCC, and FNAI, accessed August 2023.

While the biologic resources reviewed indicate that VRB is in an area that has the potential for the occurrence of wildlife listed in Table 5.2, VRB does not contain habitat that would support a majority of these species. The following specific-species surveys, monitoring, consultation, and/or permitting guidelines, established by the FFWCC and/or USFWS, should be considered for airport projects within the property limits: eastern indigo snake, gopher tortoise, American bald eagle, red-cockaded woodpecker, Florida scrub jay, Audubon's crested caracara, burrowing owl, wood stork, and the West Indian manatee (potential adjacent stormwater impacts). Further, it should be noted that all construction projects that require clearing large areas should be stabilized as quickly as possible to avoid leaving large, cleared areas for an extended duration to prevent attracting nesting shorebirds.

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801, et seq.) reflects the secretary of commerce and National Marine Fisheries Service's (NMFS) authority and responsibilities for the protection of essential fishery habitat. The act specifies that "each federal agency shall consult with the Secretary with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any essential fish habitat identified under this Act." Essential fish habitat is defined by the act as "… those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. 'Waters' include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include areas historically used by fish. 'Substrate' includes sediment, hard bottom, structures underlying the waters, and any associated biological communities. 'Necessary' means the habitat required to support a sustainable fishery and the managed species contribution to a healthy ecosystem. 'Spawning, breeding, feeding, or growth to maturity' covers all habitat types used by a species throughout its life cycle," according to Public Law 94-265, as amended by the Magnuson-Stevens act. Only species managed under a federal fishery management plan are covered.

The NMFS, also known as NOAA Fisheries, reviews potential impacts to marine listed species and coordinates for projects that may affect EFH. There are four required components of an EFH consultation: Notification, EFH assessment, NMFS EFH conservation recommendations, and U.S. Army Corps of Engineers (USACE) response. VRB is within the area of NOAA Fisheries' Southeast Regional Office.

Typically, EFH assessments are conducted where projects have the potential to affect identified resources, mostly in-water activities or activities that could affect coastal vegetation or substrate. For VRB, EFH consultation may be required for projects that discharge into adjacent drainage ditches that lead to the Indian River. This would potentially include any projects where stormwater improvements require altering conveyances or structures that discharges to the Indian River. Further, critical habitat for the West Indian manatee occurs within the main relief canal, 0.1 miles southeast of VRB and east of the U.S. 1 intersection, and the Indian River 1.6 miles east of VRB.

4.4. Department of Transportation Act: Section 4(f) and Other Environmentally Sensitive Public Lands

Section 4(f) of the Department of Transportation Act of 1966, recodified and renumbered as Section 303(c) of U.S. Code Title 49, states that the transportation secretary "may approve a transportation program or project … requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if-

(1) there is no prudent and feasible alternative to using that land; and
(2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use."

At this time, there are two recreational areas and 40 historical resources, as listed on the National Register of Historic Places and the Florida Master Site File, adjacent to or within 500 feet of the airport. The Section 4(f) recreational areas are the Troy Moody Park and the Indian River Citrus Museum, 0.4 miles and 0.6 miles, respectively, southeast of VRB. The historical resources are discussed in Section 4.6 the Florida Master Site File report in **Appendix F**. There are no wildlife and waterfowl refuges on or in the immediate vicinity of VRB. The Indian River, approximately 1.6 miles east of VRB, and the main relief canal (east of U.S. 1), 0.1 mile southeast of VRB, are the closest features designated as critical habitat, specifically for the West Indian manatee.

4.5. Hazardous Materials and Waste Management

Hazardous Materials

Federal, state, and local laws regulate hazardous materials use, storage, transport, or disposal. Major laws and issue areas include:

- Resource Conservation and Recovery Act (RCRA) – hazardous waste management
- Federal Hazardous and Solid Waste Amendments – hazardous waste management
- Comprehensive Environmental Response, Compensation, and Liability Act – cleanup of contamination
- Superfund Amendments and Reauthorization Act (SARA) – cleanup of contamination
- Emergency Planning and Community Right-to-Know Act (SARA Title III) – business inventories and emergency response planning

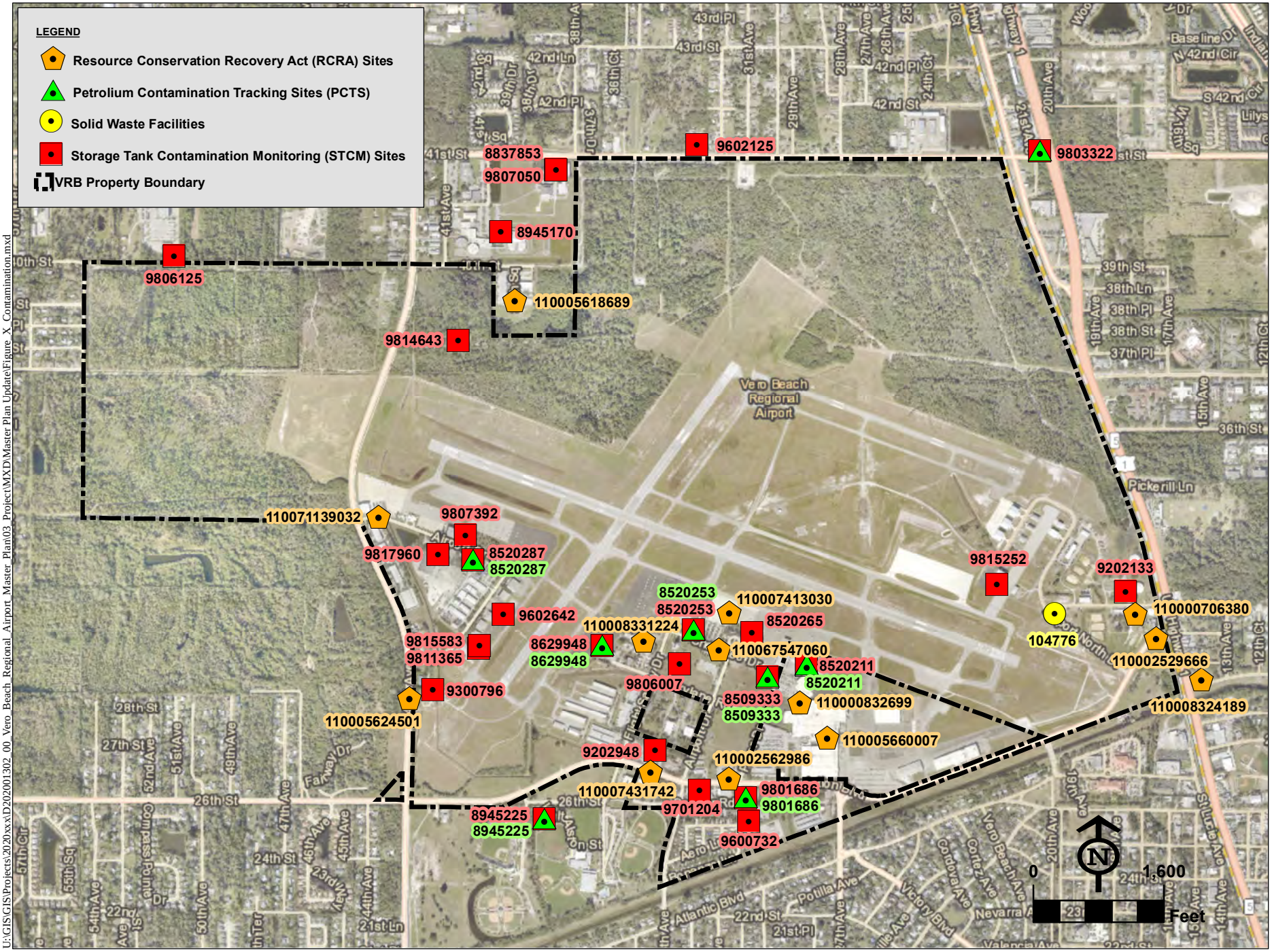
According to the Florida Department of Environmental Protection (FDEP) online RCRA database, OCULUS, there are 21 sites listed that contain/contained fuel storage tanks. In addition, there are 12 sites that store, generate, transport, treat, and dispose of hazardous waste, as well as six listed as waste cleanup sites. These sites include on-airport as well as any immediately adjacent to airport property to document the potential for future contamination resettlement. These are listed in **Table 4.3** and shown on **Figure 4.2.** The table also details that nine sites have been closed or are no longer generating waste and seven facilities with storage tanks have been closed or are "not active," as reported by FDEP. No other outstanding contamination issues were noted.

TABLE 4.3: STORAGE, WASTE GENERATION, AND REMEDIATION FACILITIES WITHIN VRB

Facility ID	Name	Comment	Compliance
Storage Tank Contamination Monitoring Sites			
9817960	VRB – Offsite Tennant	No Reports Found	NOT ACTIVE
9815583	Corporate Air Inc.	Petroleum Storage	In Compliance/Closed – NOT ACTIVE
9815252	Davis Property	Petroleum Storage	In Compliance
9814643	Indian River County West Airport Water Treatment Facility	Muriatic Acid Storage	In Compliance
9811365	Continental Jet Aviation Inc.	Petroleum Storage	In Compliance
9801686	Former Vero Beach NAS Site #1	Petroleum Storage	In Compliance/Closed – NOT ACTIVE
9807392	Paris Air Inc.	Petroleum Storage	In Compliance
9806125	Indian River County Fleet Management Complex	Petroleum Storage	FDEP Inspection Compliance Follow-up 2023
9806007	Vero Beach Airport Traffic Control Tower	Petroleum Storage	In Compliance
9701204	Chevron – Airport	Petroleum Storage	In Compliance
9602642	Corporate Aircraft Service	Petroleum Storage	In Compliance
9600073	C&D Auto	Petroleum Storage	In Compliance
9300796	Indian River County Fire Station 3	Tank Closure/Monitoring and Assessment	In Compliance/Closed – NOT ACTIVE
9202133	Vero Beach Water Treatment Facility	Misc Water Treatment Agent Storage	FDEP Inspection Required
9202948	Southern Bell – VRBHFLTC	Petroleum Storage	In Compliance/Closed – NOT ACTIVE
8629948	Pro-Flight of Vero Inc.	Tank Closure/Assessment	In Compliance/Closed – NOT ACTIVE
8520287	City of Vero Beach Public Works	Petroleum Storage	In Compliance
8520211	New Piper Aircraft Inc.	Petroleum Storage	Current Compliance Letter Not Found
8520265	Vero Beach Airport	Petroleum/Tank Closure	In Compliance/Closed – NOT ACTIVE
8520253	Skyborne Airline Academy	Petroleum Storage	In Compliance
8509333	Vero Beach Airport Services	Petroleum Storage	In Compliance
RCRA Sites			
110071139032/FLR000221465	Girard Equipment Inc.	Individual Generator	In Compliance
110008331224/FLD134336734	Chautauqua Airlines	Small Generator	NOT ACTIVE
110008324189/FLD984243063	Hill Jones Inc.	No Reports Found	No Reports Found

110007431742/FLD982153710	Bell South Communications Inc.	Individual Generator	In Compliance
110007413030/FLD981467236	Contract Application Inc.	Small Generator	NOT ACTIVE
110006754706/FLR000217927	TSA/Vero Beach Municipal Airport	No Reports Found	No Reports Found
110005660007/FLR000062083	MC Miller Company Inc.	Facility Closed	In Compliance/Closed – NOT ACTIVE
110005624501/FLD984258046	Vero Beach Fire Department 3	Small Generator	NOT ACTIVE
110002529666/FLD032823213	Riverfront Groves Inc.	Facility Removed – No Reports Found	NOT ACTIVE
110000832699/FLR000217927	Piper Aircraft Inc.	No Reports Found	No Reports Found
110000706380/FLR000140087	City of Vero Beach Water Treatment Plant	No Reports Found	No Reports Found
Solid Waste Facilities			
104776	City of Vero Beach Water Treatment Plant	Disaster Debris Management Area – Closed	In Compliance
Petroleum Contamination Tracking Sites (PCTS)			
9801686	Former Vero Beach NAS Site 1	Petroleum – Wells Tested Below Detection Limits	In Compliance/Wells Closed – NOT ACTIVE
8629948	Pro-Flight of Vero Inc.	Petroleum – Tank Closure – No Additional Actions	In Compliance/Closed – NOT ACTIVE
8520287	City of Vero Beach Public Works	Petroleum	In Compliance
8520253	Skyborne Airline Academy	Petroleum – No Testing Required	In Compliance
8520211	New Piper Aircraft Inc.	Petroleum/Chlorinated Solvent – Well Testing – Superfund Site	No Reports Found
8509333	Vero Beach Airport Services	Petroleum – No Testing Required	In Compliance

Source: FDEP OCULUS, accessed August 2023.



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Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2023, FDEP 2022, 2023, Hanson 2023, ESA 2023

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FIGURE 4.2

HAZARDOUS MATERIALS AND CONTAMINATION MONITORING SITES

Waste Management

Per FAA Order 5100.38D, master plans funded with AIP dollars must address issues related to the airport's recycling, reuse, and waste reduction programs. This includes:

- Reviewing waste management contracts
- Assessing the feasibility of solid waste recycling at the airport
- Identifying operations and maintenance requirements
- Identifying the potential for cost savings or generation of revenue
- Minimizing the generation of waste at the airport

The recycling, reuse, and waste reduction plan includes a review of the waste management and recycling throughout the airfield facilities. This was primarily achieved by surveying and interviewing the different airport tenants to understand their practices and programs. A number of potential initiatives were identified to advance VRB's recycling and waste reduction efforts. The complete plan is included as **Appendix G**.

4.6. Historical, Archaeological, and Cultural Resources

Laws and regulations require that possible effects on historic, archaeological, and cultural resources be considered during the planning and execution of federally funded projects. The primary laws that pertain to the treatment of historic, architectural, archaeological, and cultural resources during environmental analyses are the National Historic Preservation Act, the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act. Historic, architectural, archaeological, and cultural resources may include archaeological sites, buildings, structures, objects, districts, works of art, architecture, and natural features that were important in past human events. They may consist of physical remains and may include areas where significant human events occurred, even though evidence of the events no longer exist.

A review of the EPA's NEPAssist database and the Florida Master Site File indicates that 40 historical/cultural resources are identified on or within 500 feet of VRB (**Appendix F**). Of these 40 resources, 15 Florida structures, three resource groups, and five Florida sites are on or directly adjacent to the airport boundary (see **Table 4.4**). Of these, one resource group (IR01619) and two Florida sites (IR00001 and IR00009) are on VRB property. It should be noted that IR01619, identified as Indian River Farms Company Canal – 37th is an upland cut canal in the northwestern portion of VRB that is not eligible for historical listing. However, the two Florida sites (IR00001 and IR00009) in the southeast portion of VRB are eligible for historical listing because human remains may be present. Further historical and cultural evaluations would be required for potential development within the southeastern portion of VRB.

TABLE 4.4: DEPARTMENT OF HISTORICAL RESOURCES GENERATED HISTORICAL/CULTURAL RESOURCES LOCATED ON OR DIRECTLY ADJACENT TO VRB

Resource Site ID	Resource Name	Address	SHPO Evaluation
Florida Structures			
IR00207	4135 28th Avenue	Vero Beach	None Identified
IR00239	1911 38th Place	Vero Beach	None Identified
IR00248	3890 41st Street	Vero Beach	None Identified
IR00753	1345 32nd Street	Vero Beach	None Identified
IR00761	1355 33rd Street	Vero Beach	None Identified
IR00762	1365 33rd Street	Vero Beach	None Identified
IR00763	1366 33rd Street	Vero Beach	None Identified
IR00764	1376 33rd Street	Vero Beach	None Identified
IR00765	1375 33rd Street	Vero Beach	None Identified
IR00766	1394 33rd Street	Vero Beach	None Identified
IR01146	Mt. Zion Baptist Church	18th Ave., Vero Beach	Not Eligible
IR01572	3882 Old Dixie Highway	Vero Beach	Not Eligible
IR01574	Kool Cuts	4306 Old Dixie Hwy., Vero Beach	Not Eligible
IR01735	4004 43rd Avenue	Vero Beach	None Identified
IR01736	4024 43rd Avenue	Vero Beach	None Identified
Resource Groups			
IR01148	Indian River Farms Main Canal	Vero Beach	Not Eligible
IR01619	Indian River Farms Company Canal – 37th	VRB	Not Eligible
IR01723	Dodgertown	Vero Beach	None Identified
Florida Sites			
IR00001	Vero Man	VRB	Eligible
IR00009	Vero Locality	VRB	Eligible
IR01497	Florida East Coast Railroad	Vero Beach	None Identified
IR01519	Dixie Highway	Sebastian	Eligible
IR01579	Gifford Glass Scatter	Gifford	Insufficient Info

Abbreviation: SHPO – state historic preservation officer

Source: Florida Division of Historical Resources, requested August 2023.

4.7. Energy Supply and Natural Resources

Florida Power & Light Co. (FPL) is the electric power supplier to VRB and has a supply network capable of serving existing and prospective tenants at the airport. Proposed airport improvement projects would likely require lighting; power for specialized equipment, tools, and processes; office equipment; and air conditioning. Local power utility requirements would primarily include electric service. Overall, based on discussions with airport management, there is sufficient capacity to accommodate the projects envisioned in this master plan of a similar nature to existing operations. If new technology operations, such as electric aircraft, are established at VRB, VRB should work with FPL to ensure sufficient capacity is available.

4.8. Water Resources

Prior environmental studies, permit actions, reports, GIS data, and other available information were reviewed to determine the extent of water resources on airport property. The USACE, FDEP, SJRWMD and the Indian River Farms Water Control District, a political subdivision of the state of Florida, have jurisdiction over these resources at VRB.

Wetlands

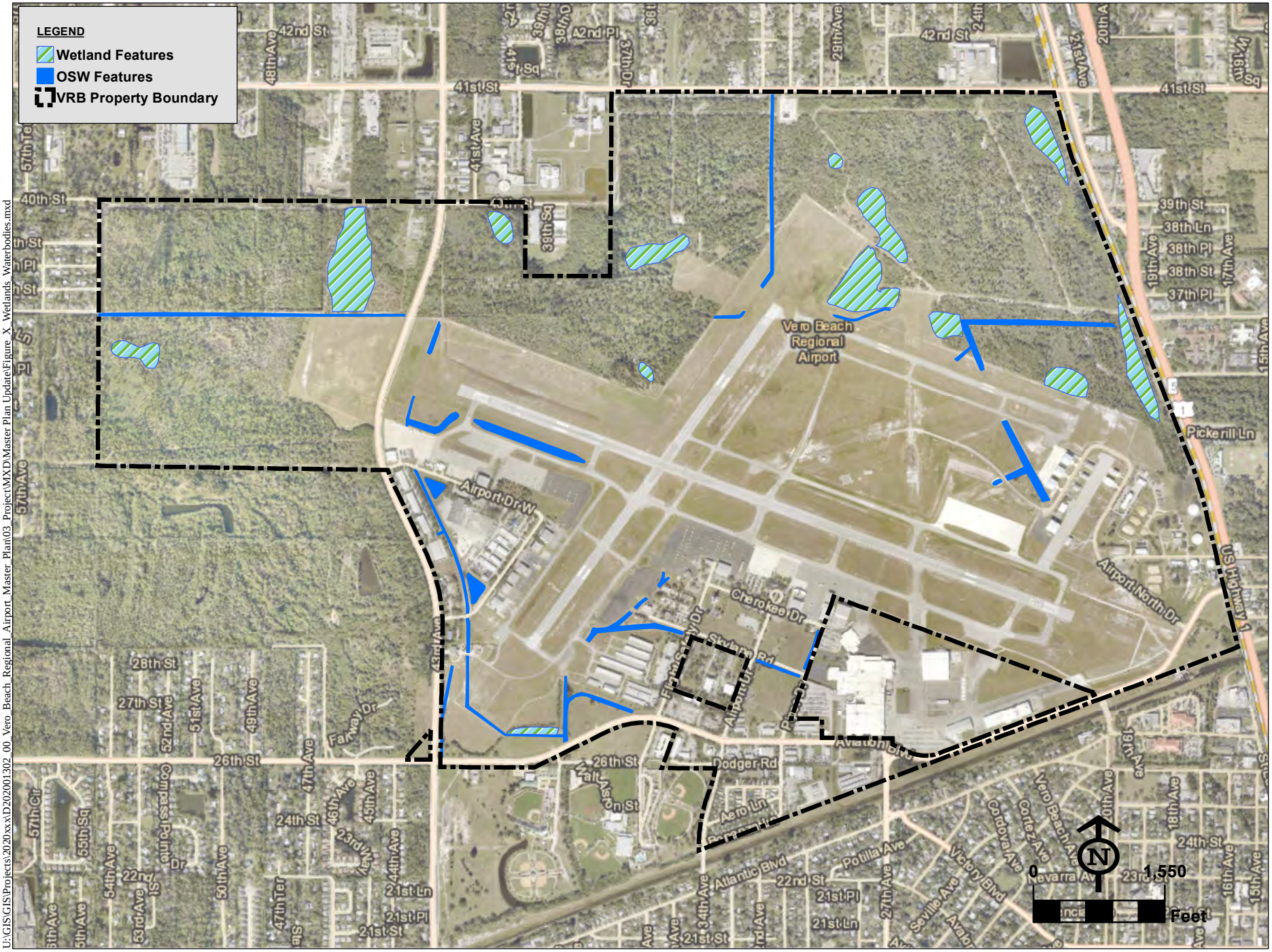
VRB is within the Central Indian River Lagoon Watershed. Jurisdictional wetlands have been identified within the airport property limits. **Figure 4.3** depicts general areas identified as wetlands and/or surface waters at VRB. However, field reviews/wetland delineations should be conducted in the naturally occurring areas of the airport property prior to clearing and permitting activities to identify the wetland extent and quality. Although VRB property limits do not abut the Indian River, discharge from the airport flows through stormwater conveyances to large stormwater features outside the airport property, then directly into the Indian River. Water quality impacts to the Indian River and any other surface water features (e.g., stormwater ditches) will require some level of NEPA review and permitting for advancing future projects.

Potential impacts to on-site wetland resources can be offset through the purchase of credits at an agency-approved mitigation bank with service areas covering the airport, such as the Basin 22 Wetland Mitigation Bank. Mitigation through a bank is consistent with the hierarchy of mitigation preference established by the USACE in its 2008 Mitigation Rule, and it is compatible with the airport and FAA's goal of reducing wildlife hazards at the airport.

Other Surface Waters

VRB maintains a large network of stormwater drainage features throughout the airport property that largely flow south toward the main relief canal along the airport's southern property limit. A majority of these features are identified as conveyances, which ultimately discharge to the Indian River. These drainage structures are maintained to reduce wildlife hazards on airport property. In addition, the airport operates under stormwater management permits and implements pollution prevention plans and best management practices. Permitting will be required if a proposed project at VRB is determined to impact these facilities. VRB is in the process of preparing a stormwater master plan that will include long-term management for surface waters. It will be coordinated with the recommended developments in this airport master plan.

National Pollutant Discharge Elimination System (NPDES) regulations serve to protect water quality. In Florida, the NPDES permit program is administered by the FDEP. An NPDES Generic Permit for construction will be required for projects at VRB that disturb more than one acre. As previously mentioned, a portion of the main relief canal along the southern limits of VRB is designated as critical habitat for the Western Indian manatee. Therefore, additional drainage and NPDES concerns may need to be addressed during the permitting process for project implementation.



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Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2023, SJRWMD 2016, Hanson 2023, ESA 2023

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FIGURE 4.3

WETLANDS AND WATERBODIES

Floodplains

Executive Order 11988: Floodplain Management, directs federal agencies "to take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains." *Department of Transportation Order 5650.2: Floodplain Management and Protection* and FAA orders 5050.4B and 1050.1F contain policies and procedures for implementing the executive order and evaluating potential floodplain impacts. Agencies are required to make a finding that there is no practicable alternative before taking action that would encroach a floodplain based on a 100-year flood.

The Federal Emergency Management Agency (FEMA) identifies flood hazard areas that are depicted on Flood Insurance Rate Maps (FIRMs). A floodplain is defined as the lowlands and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands that are, at a minimum, prone to the 100-year flood. The 100-year floodplain is considered the base floodplain.

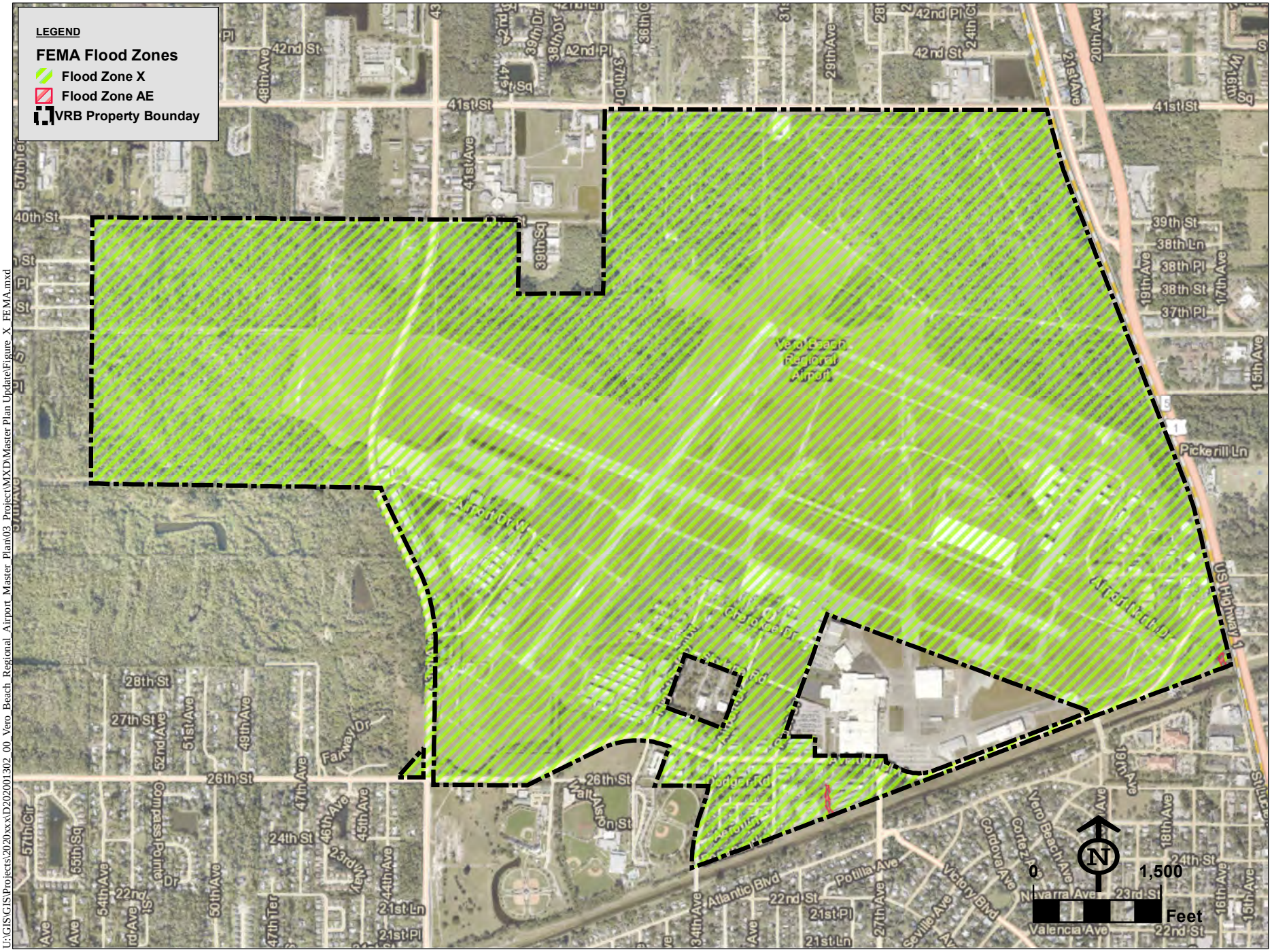
The most recent FIRMs, published in December 2022, were adopted by Indian River County January 26, 2023. **Figure 4.4** depicts the updated FIRMs for the area surrounding VRB.

The majority of the airport property is identified as Zone X, which includes moderate risk areas. Zone X areas that are identified as moderate have a 0.2% probability of flooding every year, also known as the 500-year floodplain. Two small areas along the southern property limits were identified as Zone AE. Zone AE is a special flood hazard area with a 1% annual flood risk. No base flood elevations or base flood depths are shown within these zones. While flood insurance is not typically required by regulation for Zone X, additional flood insurance will be required for projects in Zone AE.

4.9. Construction Impacts

Construction impacts are generally short-term and would vary, depending on which projects are implemented. The construction required for any proposed improvement could potentially impact air quality, surface transportation, water quality, and noise by using heavy equipment and by using vehicles to transport construction workers to and from the project sites.

For water quality, each project must adhere to the applicable stormwater pollution prevention plan maintained by VRB. Projects would also require notification or permitting through the FDEP in compliance with the NPDES program. In Florida, this program is delegated to the state and does not require additional authorization through the EPA. This process includes developing and adhering to best management practices for preventing or reducing the release of pollutants from a construction site. The construction impacts would be evaluated as part of the required NEPA analysis, prior to constructing any of the proposed improvement projects.


LEGEND
FEMA Flood Zones
Flood Zone X
Flood Zone AE
VRB Property Bounday
Vero Beach Regional Airport
Runway 11-29
Runway 13-31
Runway 9-27
Taxiway A
Taxiway B
Taxiway C
Taxiway D
Taxiway E
Taxiway F
Taxiway G
Taxiway H
Taxiway J
Taxiway K
Taxiway L
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4.10. Noise

This study did not include the development of new day-night average sound level (DNL) noise contours. However, the 65 DNL contours, shown on the land use plan in the 2016 ALP drawing set, are within VRB property and demonstrated no incompatible land uses. Since the time that the ALP was prepared, operations at VRB saw a significant decline due to a variety of factors. Even though operations today include more regular operations by commercial passenger operators, it is reasonable to assume that there are no incompatible land uses with respect to noise exposure. These contours were used recently in an environmental document because they are still considered to represent the noise conditions at the airport today.

4.11. Types of Environmental Reviews

Federal Reviews

The FAA is responsible for ensuring compliance with NEPA with respect to actions at federally obligated airports. The processing of AIP grant applications and ALP approvals are two types of “federal actions” commonly undertaken by the FAA in support of airport improvement projects that require environmental review under NEPA. While NEPA requires varying levels of interagency coordination, developing environmental documents under NEPA does not exempt airport projects from compliance with other federal environmental laws (e.g., Endangered Species Act) or state and local environmental regulations.

The process for on-airport development requiring NEPA changed when Congress passed the FAA Reauthorization Act of 2018. Section 163 of the act modified the scope of federal actions that trigger NEPA. Specifically, Section 163(d) narrowed the scope of ALP modifications considered formal actions within the regulatory authority of the FAA. Sections 163(a-c) define other factors related to how the land was acquired and whether a release of the land from aeronautical use is required as a federal action. In short, all on-airport projects are now subject to a Section 163 review by the FAA Orlando Airports District Office before initiating the NEPA process. Depending on the type of project, the FAA Section 163 review could result in a categorical exclusion (CatEx) with a release of the airport sponsor from federal obligations, a CatEx or environmental assessment (EA) for the aeronautical elements, or a combination of the two. Depending on the scope and magnitude of a project, NEPA may require an environmental impact statement (EIS).

For projects that involve a federal action, not exempted under Section 163, and requiring an environmental review under NEPA, there are three types of documentation summarized in **Table 4.5**. CatEx and EA documents are typically prepared by the airport sponsor and, if the documentation meets FAA requirements, they are accepted by the FAA and become federal documents. EIS documents are prepared by the FAA. Every future project recommended as part of this master plan is subject to the appropriate level of environmental review when a project is ready to implement. It should be acknowledged that most airport actions require some level of NEPA review, and a project does not need to be federally funded to require NEPA compliance.

TABLE 4.5: TYPES OF FAA NEPA REVIEW DOCUMENTATION (NOT SPECIFIC TO VRB)

CatEx	The FAA has identified certain actions that may be categorically excluded from a more detailed environmental review. However, extraordinary circumstances, such as wetland impacts, may preclude CatEx. A CatEx requires reviewing the impacts and completing the forms provided by the FAA. In some cases, documentation and agency coordination may be necessary to address extraordinary circumstances (see *FAA SOP 5.1: CATEX Determinations*). CatExs that may apply to future airport development projects at VRB are summarized below (emphasis added). See FAA orders 1050.1F and 5050.4B for more detailed descriptions of these and other categorically excluded actions that may apply to development projects. 1. Access and service road construction that does not reduce the level of service on local traffic systems below acceptable levels 2. Construction, repair, reconstruction, resurfacing, extending, strengthening, or widening a taxiway, apron, loading ramp, or runway safety area; or reconstruction, resurfacing, extension, strengthening, or widening of a runway — provided the action would not result in significant erosion or sedimentation and will not result in a significant noise increase over noise-sensitive areas or result in significant impacts to air quality 3. Construction or limited expansion of accessory on-site structures, including storage buildings, garages, hangars, T-hangars, small parking areas, signs, fences, and other essentially similar minor development items 4. Construction or expansion of facilities, such as terminal and parking facilities or cargo buildings, or facilities for nonaeronautical uses that do not substantially expand those facilities. 5. Demolition and removal of FAA or non-FAA on-airport buildings and structures, provided no hazardous substances or contaminated equipment are on the site of the facility; does not apply to historic structures 6. Placing fill into previously excavated land with material compatible with the natural features of the site, provided the land is not delineated as a wetland; or minor dredging or filling of wetlands or navigable waters for any categorically excluded action, provided the fill is of material compatible with the natural features of the site and the dredging and filling qualifies for a USACE nationwide or a regional general permit 7. Grading land, removing obstructions to air navigation, or erosion control measures, provided those activities occur on and only affect airport property 8. Topping or trimming trees to meet 14 CFR Part 77 standards for removing obstructions, which can adversely affect navigable airspace

EA	An EA is prepared for proposed actions with expected minor or uncertain environmental impact potential. An EA requires analysis and documentation similar to that of an EIS, but with somewhat less detail and coordination. The FAA will review the EA and decide to issue a finding of no significant impact (FONSI) or prepare an EIS. Future airport development projects and actions that may require an EA are summarized below (emphasis added). See FAA orders 1050.1F and 5050.4B for more information. 1. Runway extensions due to possible wetland impacts, potential off-airport impacts related to aircraft noise, and potential impacts to affect listed species habitat 2. Taxiway construction due to possible wetland impacts and potential to affect listed species habitat 3. Aircraft parking apron, hangar and structures, and/or access road projects that may not qualify for a CatEx due to extraordinary circumstances (e.g., wetland impacts may not qualify for a nationwide or regional general permit) 4. Approval of operation specifications or amendments that may significantly change the character of the operational environment of an airport 5. New air traffic control procedures (e.g., instrument approach procedures, departure procedures, en-route procedures) and modifications to approved procedures that routinely route aircraft over noise-sensitive areas at less than 3,000 feet above ground level
EIS	An EIS is prepared for major federal actions, which are expected or known to significantly affect the quality of the human environment.

Compiled by ESA, 2023.

State Reviews

For projects that require NEPA compliance, state environmental reviews typically initiate with the Florida State Clearinghouse, which is administered by FDEP. A primary function of the Florida State Clearinghouse is to serve as the state's single point of contact for the receipt of federal activities that require interagency review, which includes activities subject to consistency review under the Florida Coastal Management Program. Upon completion of their review, the clearinghouse will typically issue a letter summarizing any potential concerns or inconsistencies regarding the proposed activity. The clearance letter will include information on obtaining necessary state permits and will inform the applicant if there is a need to submit additional information to a state agency for review. When NEPA compliance is not required, direct coordination with the relevant state regulatory agencies may still be required. Information related to the specific agencies and coordination and/or permits required is discussed in each of the individual resource sections in this chapter.

4.12. Summary

The information provided in this chapter will be used to evaluate the different improvement options considered for the airport. The level of environmental review required for a recommended alternative will be included in the overall development program to facilitate the timely advancement of future projects.

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5. Alternatives Analysis

This chapter uses the facility requirements data to develop alternatives to meet the projected development needs at VRB. The alternatives considered must meet the aviation demand — by PAL, where applicable — and FAA design standards. In an alternatives analysis, the existing condition, also known as a no-build condition, is an alternative that should be considered. While graphics depicting the existing condition may not be included in this chapter, the development alternatives identified will be compared against the no-build condition as part of the evaluation.

Improvements, especially to the taxiway system, were identified in the previously approved ALP. These previously recommended improvements, which have not been constructed, will be evaluated to ensure they continue to meet FAA design standards and projected VRB user needs, as identified in the facility requirements. If the previously preferred alternative still meets these criteria, a full range of alternatives will not be developed for that facility; rather, the recommended alternative will be confirmed.

As identified in the facility requirements, the based aircraft are projected to grow to more than 300 from approximately 200 aircraft. The annual operations are projected to increase to more than 300,000, surpassing the pre-COVID-19 peak, and the annual enplaned passengers are projected to grow to more than 50,000. In this chapter, alternatives to meet VRB's development needs during the 20-year planning period are identified and evaluated for a variety of factors. The conceptual development alternatives are evaluated based on the goals and objectives identified for the airport master plan. They will be evaluated for operational performance, best planning practices, and environmental and fiscal factors. In particular, they will be evaluated for:

- Ease of operations
- Conformance to best practices for safety and security
- Conformance to the intent of FAA design standards and other appropriate planning guidelines
- Providing highest and best on- and off-airport land use
- Allowing for forecast growth throughout the planning period and beyond, as applicable
- Balance between functional area and types of users
- Providing flexibility to adjust to unforeseen changes
- Ability to meet airport sponsor's vision
- Conformance with appropriate local, regional, and state transportation plans and other applicable plans, developments of regional impact, or zoning
- Technical feasibility
- Social and political feasibility
- Ability to meet users' needs
- Minimizing or ability to mitigate environmental impacts
- Financial feasibility for implementation

Not all factors will apply to all alternatives. Only those applicable to an alternative are described in its evaluation. In this chapter, unless required to evaluate the alternatives, the financial feasibility will be considered at a macro level, e.g., if the alternative is financially feasible. Development cost estimates will not be prepared for every alternative. As part of the implementation plan, the probable development cost estimates will be prepared for the recommended development. The environmental overview chapter provides additional details on VRB's environmental setting that was used to evaluate the alternatives.

The alternatives are developed and evaluated with a primary focus on the airfield, then facilities that require airfield access. After identifying the areas required to support the high demand for aeronautical development, the remaining areas will be evaluated to support nonaeronautical facilities. Nonaeronautical facilities provide additional revenue streams for VRB to support the aeronautical functions. The facility requirements identified for each airfield and airside feature will be identified at the start of the analysis for that section.

To meet the aviation demands at VRB throughout the course of the 20-year planning horizon, this chapter focuses on alternatives for:

- Airfield: runway and taxiway systems and navaids and airfield support infrastructure, including:
    - Runway 12R/30L widening
    - Potential for lower instrument approach minimums on the instrument runways
    - Improvements to eliminate the use of declared distances on runways 12R/30L and 4/22
    - Potential extension of Runway 4/22
    - Improving the taxiway system to meet the latest FAA design standards
    - Additional parallel taxiway extensions and connectors to maximize utility of the runways
- Accommodating emerging aircraft technologies
- Airside commercial service, including:
    - Terminal building expansion
    - Auto parking expansion
    - Improved pedestrian access to the terminal
- GA hangar facilities, including improvements to maximize available development areas
- Other auto parking and utility improvements
- Nonaeronautical development opportunities

This chapter focuses on alternatives that could change the geometry of facilities on the airfield. For any facilities that will remain unchanged, while not accessed in the alternatives, recommendations for keeping them in good operational condition through maintenance, rehabilitation, reconstruction, or replacement will be incorporated as part of the implementation plan.

While this chapter will recommend alternatives to meet the facility requirements, an important step in the alternatives analysis process is to present these alternatives to airport staff, tenants, the public, and other agencies for input. This input will be incorporated to form the recommended development plan.

5.1. Runway System

The facility requirements chapter identified potential improvements to the runways at VRB. Each of these runway improvements is discussed in the following sections.

Runway system facility requirements

- Improve Runway 12R/30L for ARC C-III aircraft with MTOW > 150,000 pounds.
- Evaluate the feasibility of instrument approaches with less than a 3/4-mile visibility on Runway 12R/30L and a 7/8-mile visibility on Runway 4/22.
- Evaluate the feasibility of eliminating the use of declared distances on runways 12R/30L and 4/22.
- Extend Runway 4/22 to at least 5,000 feet and up to 5,700 feet to better serve the critical aircraft.
- Resolve runways 4/22 and 12L/30R overlapping RSAs.
- Minimize aircraft parked in RVZ when the ATCT is closed.

The facility requirements chapter identified a different critical aircraft for each of the runways at VRB. **Table 5.1** lists the key design standards applicable to each runway.

TABLE 5.1: EXISTING AND FUTURE RUNWAY DESIGN STANDARDS

Runway	Critical Aircraft	Runway Length x Length	RSA	ROFA	RPZ
12R/30L Existing	C-III Airbus 220-300	7,314' x 100'	1,000' beyond end, 600' before landing, 500' wide	1,000' beyond end, 600' before landing, 800' wide	1,000' inner width, 1,510' outer width, 1,700' length
12R/30L Future	D-III Gulfstream G650	7,314' x 150'	1,000' beyond end, 600' before landing, 500' wide	1,000' beyond end, 600' before landing, 800' wide	Up to 1,000' inner width, 1,750' outer width, 2,500' length
4/22 Existing	D-II Gulfstream G450	4,974' x 100'	1,000' beyond end, 600' before landing, 500' wide	1,000' beyond end, 600' before landing, 800' wide	500' inner width, 1,010' outer width, 1,700' length
4/22 Future	D-II Gulfstream G450	5,000' to 5,700' x 100'	1,000' beyond end, 600' before landing, 500' wide	1,000' beyond end, 600' before landing, 800' wide	500' inner width, 1,010' outer width, 1,700'; length
12L/30R Existing and Future	B-II Small Aircraft King Air B200	At least existing 3,504' x 75'	300' beyond end, 300' before landing, 150' wide	300' beyond end, 300' before landing, 500' wide	250' inner width, 450' outer width, 1,000' length

Sources: VRB Airport Master Plan: Forecast Chapter, prepared by ESA, 2023; FAA AC 150/5300-13B.

Runway 12R/30L

Runway Width

Runway 12R/30L is the primary runway at VRB. This runway is 7,314 feet long by 100 feet wide, with 20-foot-wide shoulders and blast pads that are 200 feet long by 140 feet wide. The existing critical aircraft is an Airbus A220-300, which has a MTOW of 156,000 pounds. Per AC150/5300-13B, runways that have a critical aircraft with an MTOW greater than 150,000 pounds should be 150 feet wide with shoulders that are 25 feet wide and a runway blast pad that is 200 feet wide and long. The existing runway length meets the operational needs; therefore, no changes to the runway length are recommended.

There is space available on VRB to widen Runway 12R/30L and make the shoulders and blast pad improvements to meet the FAA design standards for aircraft with an MTOW greater than 150,000 pounds. Therefore, the future development plans should consider increasing the runway width to 150 feet. If widened, the runway should be widened on each side to maintain the runway centerline to parallel centerline separation with the appropriate shoulders and blast pad improvements. The need to widen the runway is triggered by the operations of the Airbus A220-300, which has a maximum takeoff weight of 156,000 pounds, slightly more than the 150,000 pounds trigger for an increased runway width. The Airbus A220-300 is operating on Runway 12R/30L and can continue to operate on this runway until it is improved.

Runway 12R/30L Width Recommendation

It is recommended to widen Runway 12R/30L to 150 feet wide, widen the shoulders to 25 feet wide (beyond the wider runway), and enlarge the blast pads to 200 feet long and wide. The Airbus A220-300 has been operating regularly at VRB for approximately seven months. A longer history of regular operations by aircraft with an MTOW of more than 150,000 pounds should be present before investing in widening the runway. Runway 12R/30L was rehabilitated in 2022. The runway widening could be planned to coincide with a future Runway 12R/30L paving project or runway lighting project to avoid disturbing the infrastructure before it has met is useful life.

Potential Improvements to Instrument Approach

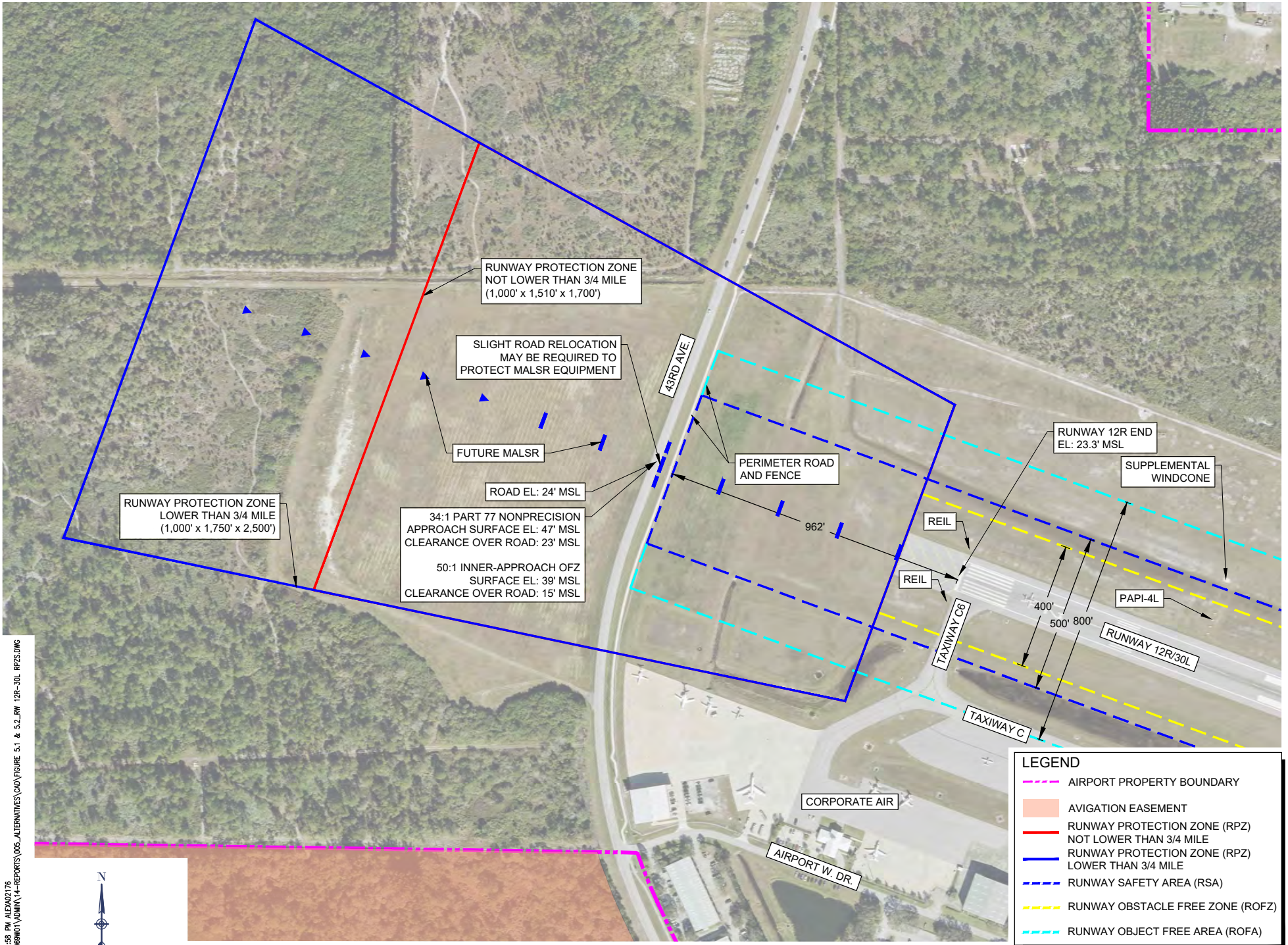
There are three criteria that must be considered for instrument approaches: Part 77, FAA AC 150/5300-13B design standards, and TERPS. An airport should strive to meet Part 77 surfaces. The airport needs to meet the design standards, and the FAA will use TERPS to design the instrument approach and missed approach and establish the appropriate minimums.

Both ends of Runway 12R/30L have an LPV approach, with visibility minimums of 3/4 of a mile. Each runway end has a Part 77 nonprecision approach surface with a 34:1 slope and an RPZ with visibility minimums of not lower than 3/4 of a mile, with dimensions of 1,000 feet by 1,510 feet by 1,700 feet. With ongoing commercial service operations, the potential to improve each runway end to an approach with visibility minimums that are lower than 3/4 of a mile using GPS (similar capability to a precision approach) was evaluated to maximize the accessibility of VRB.

An LPV approach, even with lower minimums, is still classified as an approach with vertical guidance, not a precision approach. Therefore, the Part 77 precision approach surface with a slope of 34:1 is unchanged. However, the dimension of the RPZ increases to 1,000 feet by 1,750 feet by 2,500 feet. *FAA AC 150/5190-4B: Airport Land Use Compatibility Planning* identifies that RPZs should be clear of incompatible objects and land use. 43rd Avenue is within the RPZ for Runway 12R. Public roads are an incompatible land use and should be avoided within an RPZ to the extent feasible, especially if not an existing condition. Establishing an approach with a visibility that is lower than 3/4 of a mile on Runway 12R would be a change to the runway, and the FAA will require an RPZ analysis and that removing the land use of a road in an RPZ be considered, as discussed in the upcoming section on Runway 12R/30L declared distances.

Figure 5.1 shows the larger RPZ for an approach with lower-than-3/4-mile visibility on the Runway 12R end would remain within the airport property boundary; therefore, no additional aviation easements would be required. With 3/4-mile visibility minimums, Runway 12R/30L already supports a 1,000-foot-wide primary surface, so there would be no change to the primary surface for a precision approach.

To facilitate an approach with lower-than-3/4-mile visibility, at least a medium intensity approach lighting system with sequenced runway alignment indicator lights (MALSR) would be required. A MALSR extends 2,400 feet from the runway end and consists of enhanced threshold lighting, light bars, and strobe lights extending into the RPZ. This system could be installed within airport-owned property. With airline service, the ability to provide lower minimums could be a benefit to the operations. Instrument approach minimums below 3/4 of a mile would require a larger RPZ, plus the associated costs of MALSR installation and operation and a potential road relocation.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 1:58 PM ALEXA02176
I:\20J08S\20A0069W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.1 & 5.2_RW 12R-30L RPZS.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	INSTRUMENT APPROACH IMPROVEMENTS RUNWAY 12R
DRAWN BY: JA	CHECKED BY: SZ	FIGURE 5.1	

Runway 12R Instrument Approach Recommendation

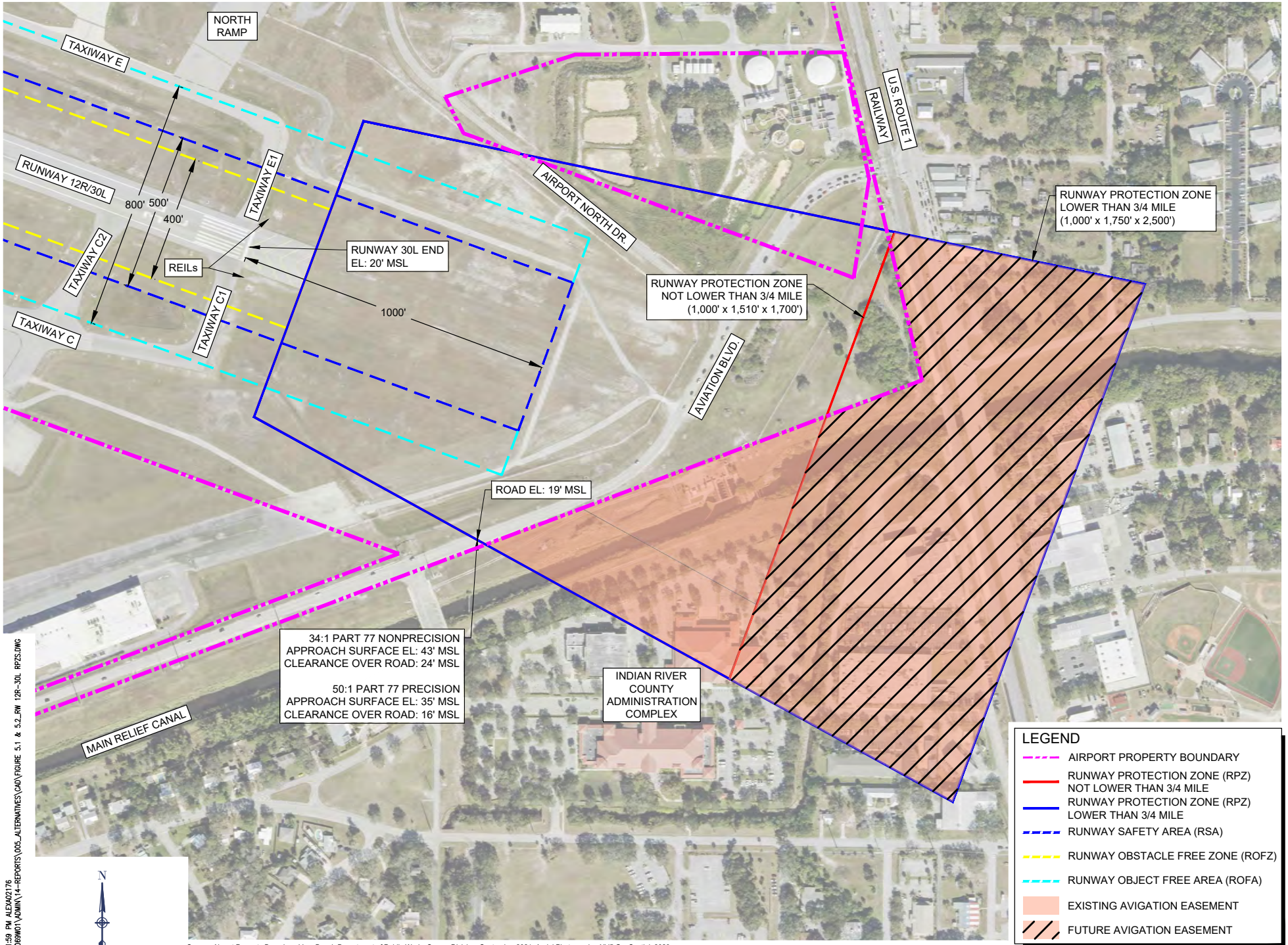
While the no-build condition of 3/4-mile visibility minimums can continue to serve VRB, VRB has space on airport property to install an approach lighting system and support a precision approach on Runway 12R. Therefore, it is recommended to install an approach lighting system for reduced visibility minimums on Runway 12R to support commercial operations and enhance the safety of the airport during instrument approach procedures. This improvement is anticipated to require relocating 43rd Avenue. As part of the implementation plan that will be prepared for this master plan, the investment to lower the instrument approach minimums to Runway 12R should be evaluated further to determine the recommended triggers and/or timing. VRB should also consult with the FAA to identify the potential controlling object for an approach with visibility that is lower than 3/4 of a mile if other obstacle removals are needed to obtain the lowest minimums.

Figure 5.2 shows that the larger RPZ on the Runway 30L end would extend beyond the airport property boundary, which would introduce additional incompatible land use, including an additional roads and buildings, and would require approximately 28 acres of additional avigation easements to protect the RPZ. Steps to reduce the incompatible development would also need to be considered.

Runway 30L Instrument Approach Recommendation

With the extensive development off the end of Runway 30L, the cost to mitigate the incompatible land use would be extensive and have significant off-airport impacts due to the locations of roads, railroads, and buildings. The cost of mitigating incompatible land use within the larger RPZ for a lower visibility approach would not outweigh the benefit of an improved instrument approach. Therefore, to avoid additional incompatible land use in the Runway 30L RPZ and potential impacts on the area adjacent to the airport, the no-build condition of an instrument approach with 3/4 of a mile of visibility is recommended on Runway 30L.

Airlines also need to plan for one-engine inoperable conditions on a departure. For domestic operations, this is defined by the FAA as the obstacle accountability area (OAA). The slope in the OAA is best approximated by 62.5:1 from the end of the TORA. While not required to be cleared as part of FAA design standards, objects within this surface will be reviewed as part of the approach surface analysis during the preparation of the ALP to identify any improvements to maximize the available runway length for airline operations.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 1:59 PM ALEXA02176
I:\20J08S\20A0069W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.1 & 5.2_RW 12R-30L RPZS.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	INSTRUMENT APPROACH IMPROVEMENTS RUNWAY 30L
DRAWN BY: JA	CHECKED BY: SZ	FIGURE 5.2	

Runway 12R/30L Declared Distance Improvements

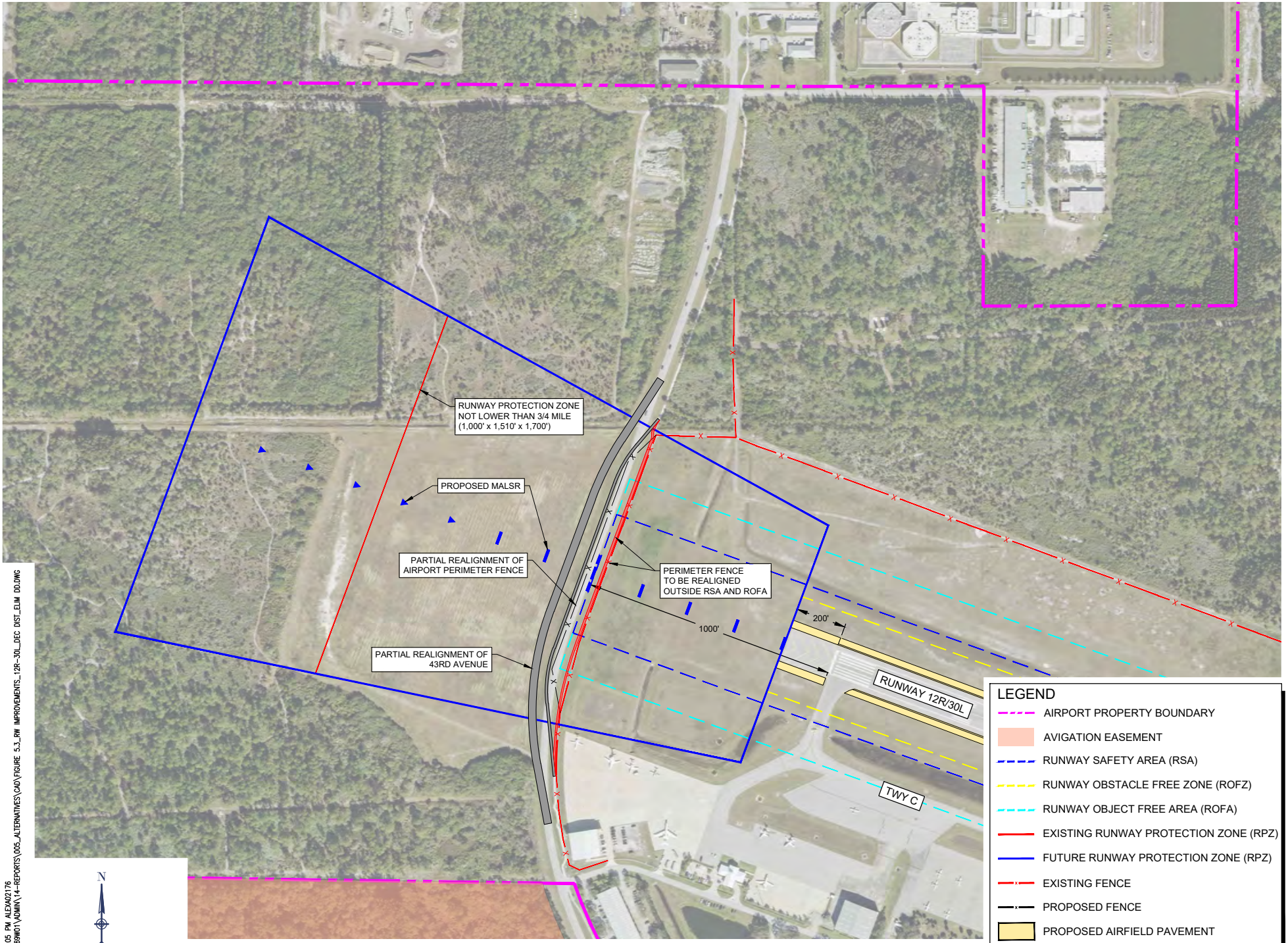
ARC C/D-III standards require that the RSA and ROFA extend 1,000 feet beyond the takeoff end of the runway. At the time of this airport master plan, declared distances are published for Runway 12R/30L. These declared distances are in place due to the perimeter road and fence, which are within 1,000 feet of the physical end of Runway 12R. Declared distances of 7,276 feet are implemented on Runway 30L for accelerate-stop distance available (ASDA) and landing distance available (LDA) operations. By shortening the available runway length for the Runway 30L ASDA and LDA, the declared distances provide aircraft taking off and landing on Runway 30L a 1,000-foot RSA beyond the Runway 12R end. While the use of declared distances provides a safe operating environment by meeting FAA design standards, the potential to recapture the runway length through improvements to eliminate declared distances should be evaluated.

Figure 5.3 shows the minimum realignment of 43rd Avenue and the airport perimeter road and fence to provide the standard 1,000-foot RSA beyond the physical end of Runway 12R. Relocating the airport perimeter road and fence would require a partial realignment of 43rd Avenue. The community is planning improvements to 43rd Avenue to accommodate growing development in the vicinity of the airport. The airport owns land that could accommodate the realignment of 43rd Avenue off the end of Runway 12R. VRB should work with the community to incorporate realigning 43rd Avenue as part of any future improvement plans to allow for the realignment the airport perimeter road and fence to eliminate the declared distances. Moving 43rd Avenue farther from the end of Runway 12R would also increase the margin of safety on Runway 12R/30L.

As discussed above, it is recommended that VRB preserve the space to provide an instrument approach on Runway 12R. **Figure 5.4** shows a relocation of 43rd Avenue outside the limits of a precision approach RPZ and within airport property. The speed limit on 43rd Avenue is 35 mph. It should be feasible to design the relocated 43rd Avenue to maintain that speed limit; however, the travel distance will increase from 3,500 feet to approximately 6,600 feet.

<u>Runway 12R/30L Declared Distances Recommendation</u>

VRB should work with the community such that, at a minimum, the slight realignment of 43rd Avenue would be included as part of the next improvement project on 43rd Avenue to eliminate the declared distances on Runway 12R/30L. Space should be preserved and coordination initiated to determine whether the community would accept a potentially larger relocation of 43rd Avenue around the RPZ to enable VRB to accommodate an approach with lower than 3/4 of a mile of visibility on Runway 12R and remove an incompatible land use from the RPZ.

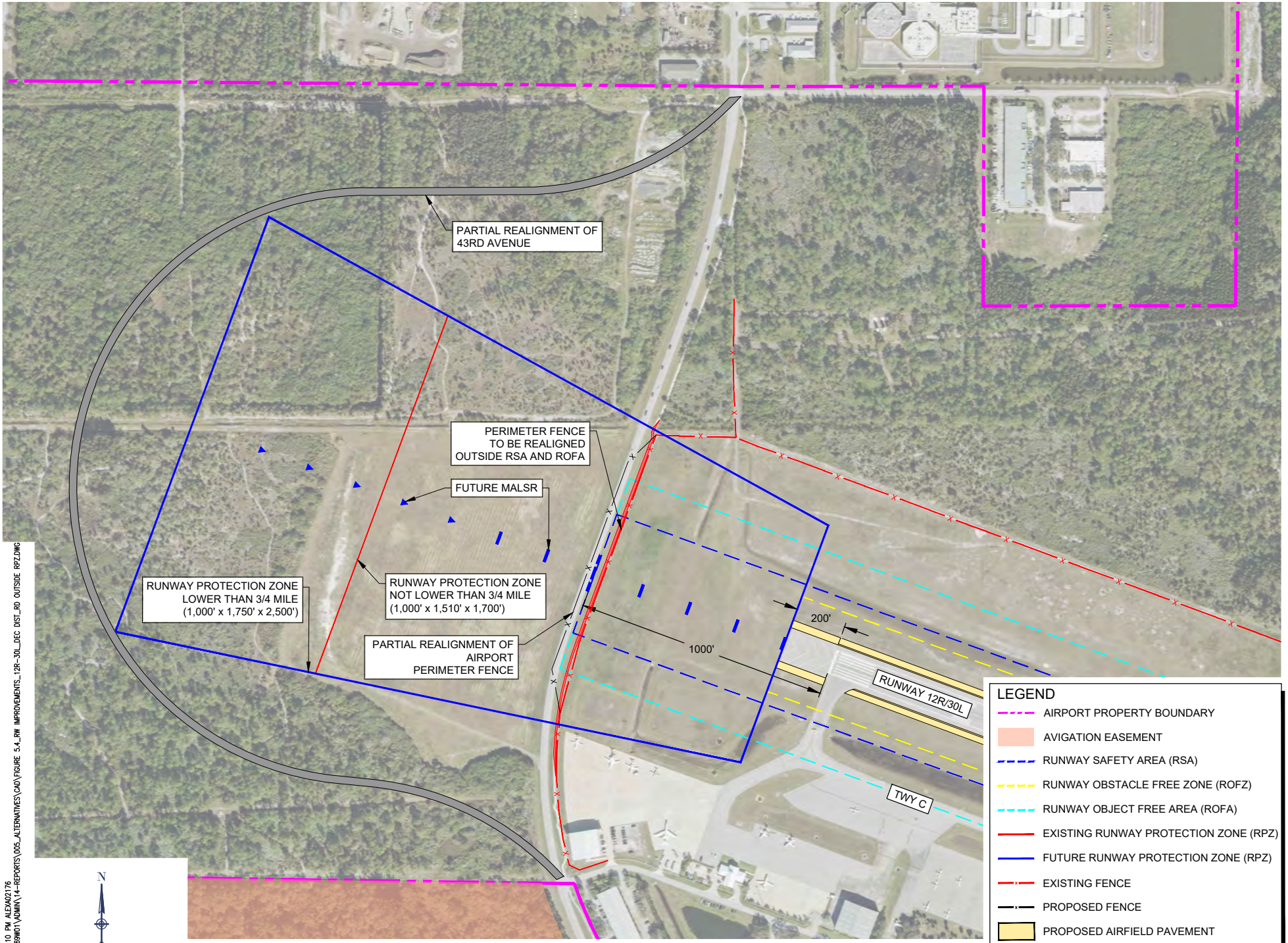


Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 2:05 PM ALEXA02176
I:\20J08S\20A0069W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.3_RW IMPROVEMENTS_12R-30L_DEC DIST_ELIM DD.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	POTENTIAL IMPROVEMENTS TO RUNWAY 12R/30L DECLARED DISTANCES

DRAWN BY:	JA	FIGURE 5.3
CHECKED BY:	SZ	



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 2:10 PM ALEXA02176
I:\20J08S\20A0069W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.4_RW IMPROVEMENTS_12R-30L_DEC DIST_RD OUTSIDE RPZ.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

43RD AVENUE REALIGNMENT OUTSIDE OF RUNWAY 12R RPZ - LOWER THAN 3/4 MILE

DRAWN BY:	JA	FIGURE 5.4
CHECKED BY:	SZ	

Runway 4/22

Length and Instrument Approaches

Runway 4/22, known as the crosswind runway, is needed to provide crosswind coverage for the ARC A-I to B-II aircraft operating at VRB, including corporate jets and smaller GA traffic. However, Runway 4/22 is also used by larger aircraft able to operate on its 4,974-foot length and 100-foot width. The existing Runway 4/22 critical aircraft is ARC C-II, and the future critical aircraft is ARC D-II. The ARC C-II and D-II standards are generally the same. Because the runway length is 4,974 feet, there are operational constraints on some larger operators when using Runway 4/22. As identified in the facility requirements, at least 5,000 feet and up to 5,700 feet should be provided on Runway 4/22 to meet the critical aircraft (ARC C/D-II) operating on this runway.

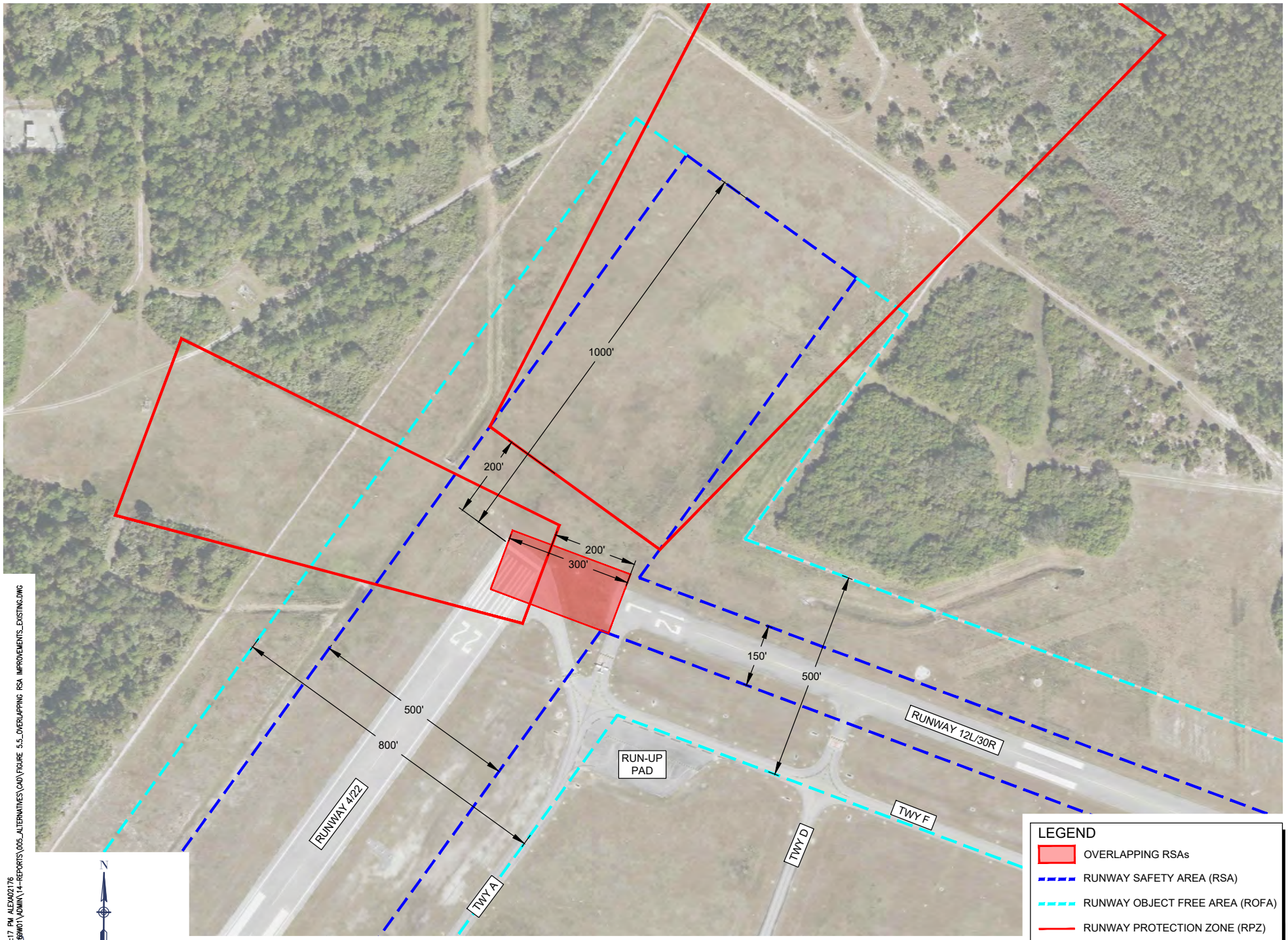
Resolve Overlapping RSAs

As identified in the facility requirements and shown on **Figure 5.5**, the RSA of runways 4/22 and 12L/30R overlap, and the end taxiway connector to Runway 22 is not at a standard 90-degree angle to the runway. Therefore, the potential alternatives for extending Runway 4/22 should also consider improvements to eliminate the overlapping RSAs and provide standard taxiway connectors. Three alternatives were identified to address extending Runway 4/22 and improving the taxiway connectors and reducing or eliminating the overlapping RSA. All the alternatives are within existing VRB property.

Alternative 1, depicted on **Figure 5.6,** extends Runway 4/22 to 5,300 feet, the minimum length to provide a standard connector to the end of Runway 22 from Taxiway A, with space to allow an aircraft to hold at the end of Runway 22 clear of Runway 12L. Also, as identified in the facility requirements chapter, extending Taxiway B the full length of Runway 4/22 should be considered, so it is included in this alternative and depicted in Figure 4.6. In this alternative, the nonstandard taxiway connectors are resolved; however, the overlapping RSAs remain.

Alternative 2, as depicted on **Figure 5.7,** builds on Alternative 1 but shortens the Runway 12L end by 339 feet to resolve the overlapping RSAs with the taxiway modification. Reducing the length of Runway 12L/30R allows sufficient space to protect for the full RSA of 300 feet beyond the Runway 12L end; however, this option reduces Runway 12L/30R to 3,165 feet long. Shortening Runway 12L/30R does not meet the minimum usable length, as identified in the facility requirements of 3,600 feet. Further, the flight schools that use this runway already have runway length limitations with aircraft such as the Piper Arrow and Seminole during touch-and-go training operations, and shortening the runway length would introduce additional operational limitations that would potentially impact airfield capacity.

Alternative 3, as depicted on **Figure 5.8**, extends the Runway 12L and 22 ends by 700 feet and 326 feet, respectively, eliminating the overlapping RSA without reducing the length of Runway 12L/30R. The extensions on both runway ends are the minimum length required to meet airfield design standards. These airfield design standards include the runway-to-taxiway centerline separation of 400 feet for the extension of future Taxiway B and for aircraft taxiing on the future Taxiway A extension to hold short and perpendicular at Runway 22. This alternative includes the extension of the parallel taxiways on each side of Runway 4/22 to enhance airfield access. This alternative resolves the overlapping RSAs and the operational needs to extend Runway 4/22 to at least 5,000 feet. The run-up pad near the end of Runway 12L is proposed to be expanded to the east to replace the portion within the realigned and extended Taxiway A.

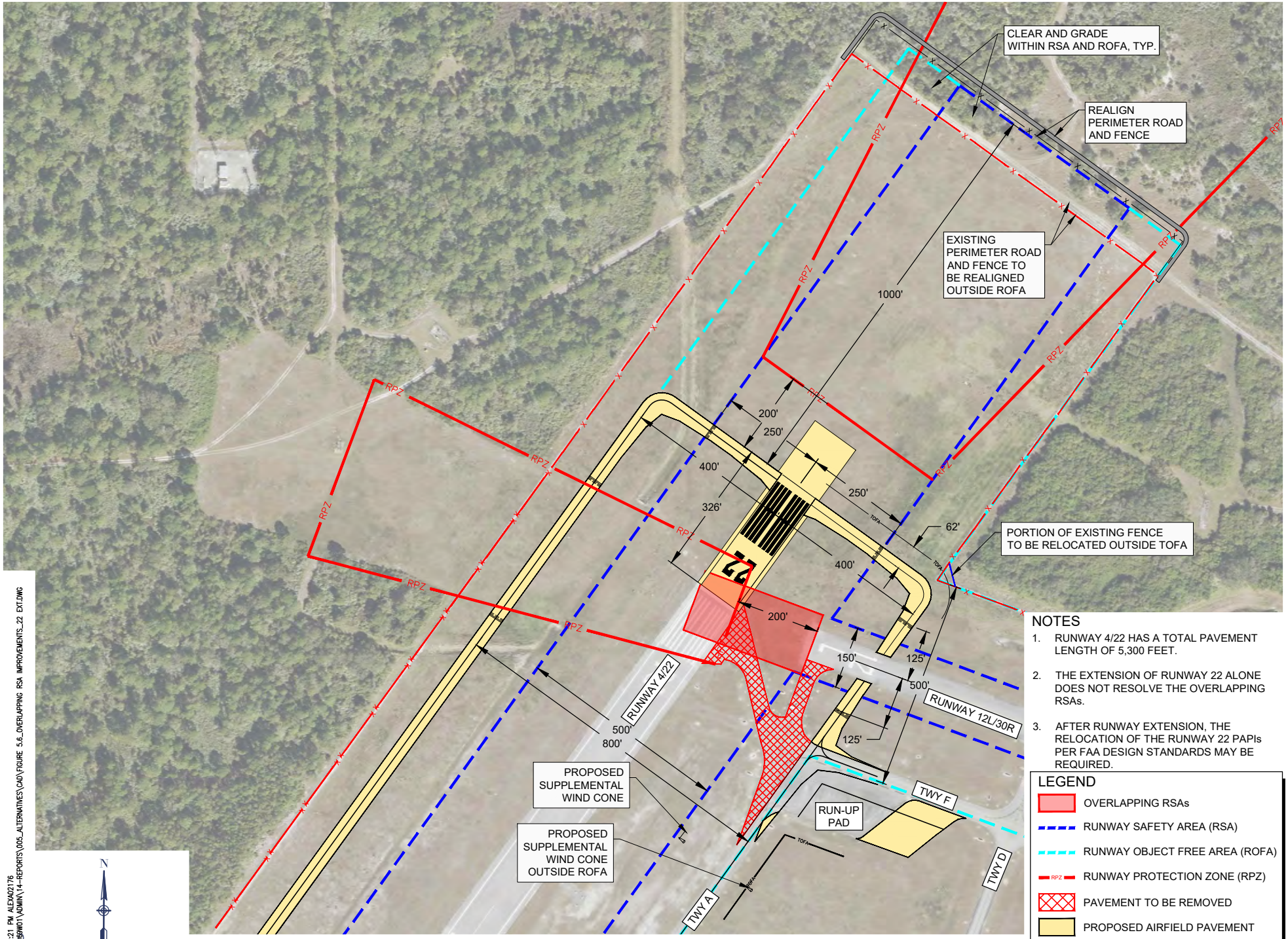


Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 2:17 PM ALEXA02176
I:\20L08S\20A06S\WO1\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.5_OVERLAPPING RSA IMPROVEMENTS_EXISTING.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	OVERLAPPING RSAs RUNWAYS 4/22 AND 12L/30R

DRAWN BY:	JA	FIGURE 5.5
CHECKED BY:	SZ	



NOTES

1. RUNWAY 4/22 HAS A TOTAL PAVEMENT LENGTH OF 5,300 FEET.
2. THE EXTENSION OF RUNWAY 22 ALONE DOES NOT RESOLVE THE OVERLAPPING RSAs.
3. AFTER RUNWAY EXTENSION, THE RELOCATION OF THE RUNWAY 22 PAPIs PER FAA DESIGN STANDARDS MAY BE REQUIRED.

LEGEND

- OVERLAPPING RSAs
- RUNWAY SAFETY AREA (RSA)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY PROTECTION ZONE (RPZ)
- PAVEMENT TO BE REMOVED
- PROPOSED AIRFIELD PAVEMENT

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

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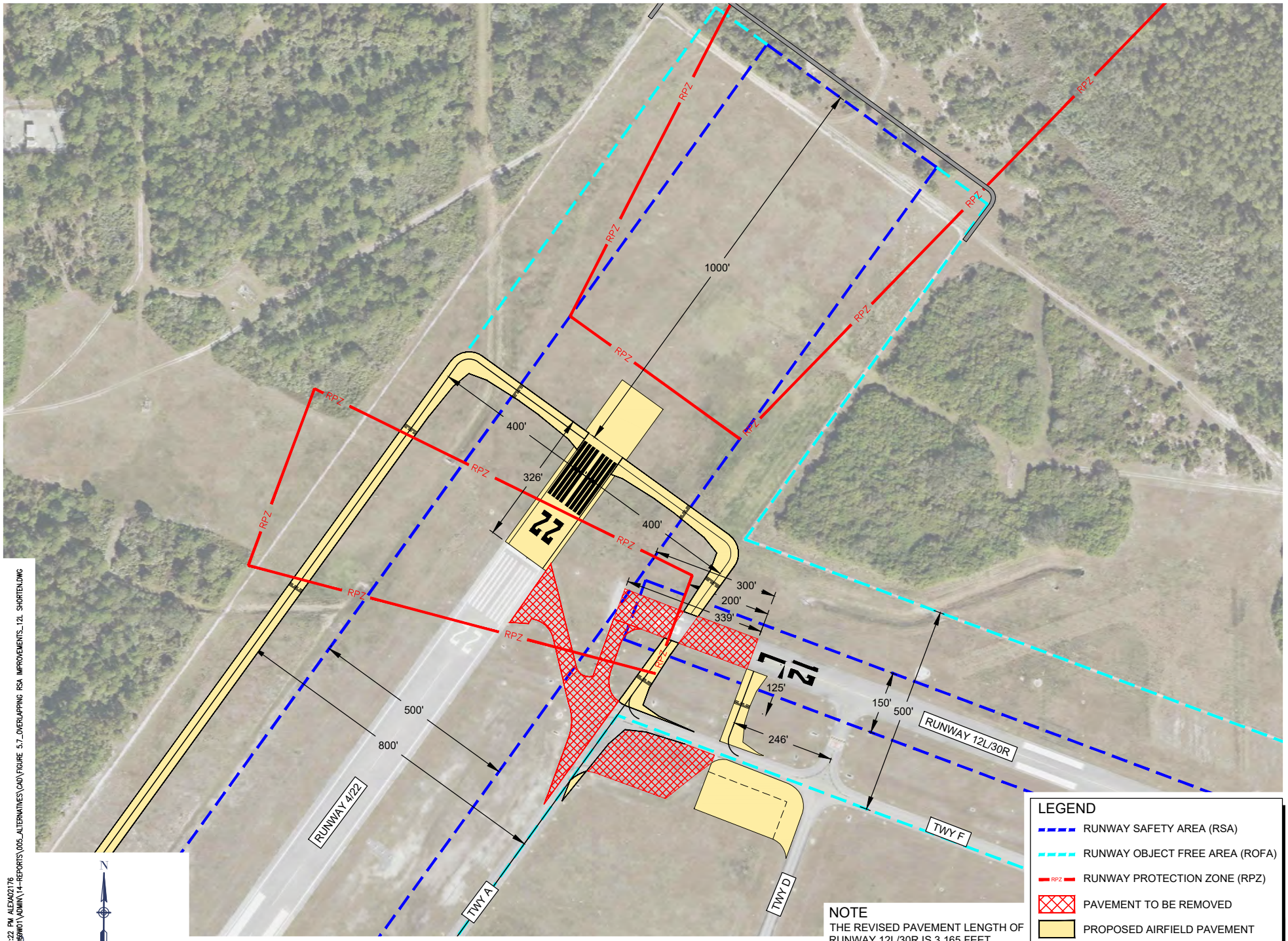
I:\20J08S\20A06BW01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.6_OVERLAPPING RSA IMPROVEMENTS_22 EXT.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	ALTERNATIVE 1 EXTEND RUNWAY 22 AND TAXIWAY GEOMETRY MODIFICATIONS

DRAWN BY:	JA	FIGURE 5.6
CHECKED BY:	SZ	

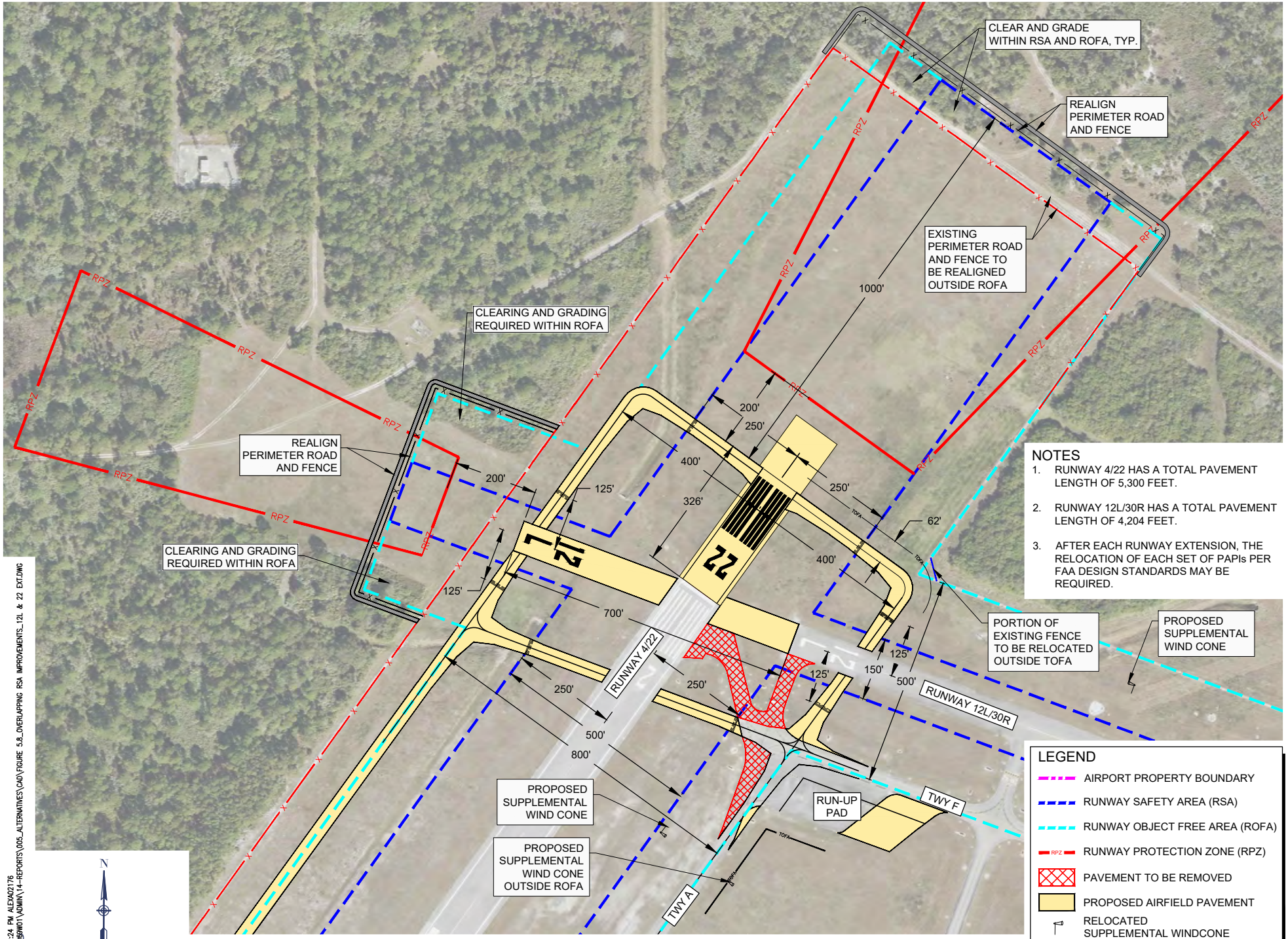


Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 2:22 PM ALEXA02176
I:\20J08S\20A06BW01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.7_OVERLAPPING RSA IMPROVEMENTS_12L SHORTEN.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	ALTERNATIVE 2 SHORTEN RUNWAY 12L TO ELIMINATE OVERLAPPING RSAs

DRAWN BY:	JA	FIGURE 5.7
CHECKED BY:	SZ	



NOTES

1. RUNWAY 4/22 HAS A TOTAL PAVEMENT LENGTH OF 5,300 FEET.
2. RUNWAY 12L/30R HAS A TOTAL PAVEMENT LENGTH OF 4,204 FEET.
3. AFTER EACH RUNWAY EXTENSION, THE RELOCATION OF EACH SET OF PAPIs PER FAA DESIGN STANDARDS MAY BE REQUIRED.

LEGEND

- AIRPORT PROPERTY BOUNDARY
- RUNWAY SAFETY AREA (RSA)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY PROTECTION ZONE (RPZ)
- PAVEMENT TO BE REMOVED
- PROPOSED AIRFIELD PAVEMENT
- RELOCATED SUPPLEMENTAL WINDCONE

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GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

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I:\20L08S\20A0089W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.8_OVERLAPPING RSA IMPROVEMENTS_12L & 22 EXT.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

ALTERNATIVE 3
EXTEND RUNWAY 22 AND 12L TO ELIMINATE OVERLAPPING RSAs

DRAWN BY:	JA	FIGURE 5.8
CHECKED BY:	SZ	

Maximum Runway 22 Extension

As previously shown in Figure 5.6, extending the Runway 22 end 326 feet for a total length of 5,300 feet is the minimum runway extension necessary to comply with FAA airfield design standards of holding aircraft perpendicular to the runway. The facility requirements identified the need to extend Runway 4/22 up to 5,700 feet for the critical aircraft. **Figure 5.9** depicts the extension of Runway 22 for a total runway length of 5,700 feet. At this length, the Runway 22 RPZ remains within airport property while providing standard taxiway connectors and resolving the overlapping RSAs. The perimeter road and fence beyond the Runway 22 end would require relocation to provide the full 1,000-foot RSA. This would also require the relocation of the Runway 22 PAPIs to comply with the FAA siting standards for the distance from the runway threshold. The supplemental wind cone on the Runway 22 end needs to be replaced, as detailed in the navaids section, so it can be located such that the supplemental wind cone would comply with FAA design standards for the extended runway. Clearing and grading would be required within the RSA and ROFA. Also, the extension of Runway 22 would shift the runway approach surfaces farther north, so it is likely that removing trees or other obstructions will be needed. This will be further analyzed in the ALP.

The commercial airline operator indicated that to consider using the crosswind runway, the runway would need to be approximately 6,000 feet long. Because 5,700 feet is the maximum length within the airport's property, the critical aircraft for an extension of Runway 4/22 would remain ARC C/D-II.

<u>Runway 4/22 Extension and Overlapping RSA Alternatives Recommendation</u>

The taxiway geometry in the no-build condition does not meet the latest FAA design standards. Therefore, the no-build condition is not acceptable, and the taxiway configuration should be modified to meet FAA design standards. Only alternatives 2 and 3 meet FAA design standards. The overlapping RSAs remain in Alternative 1; therefore, Alternative 1 has been eliminated from consideration.

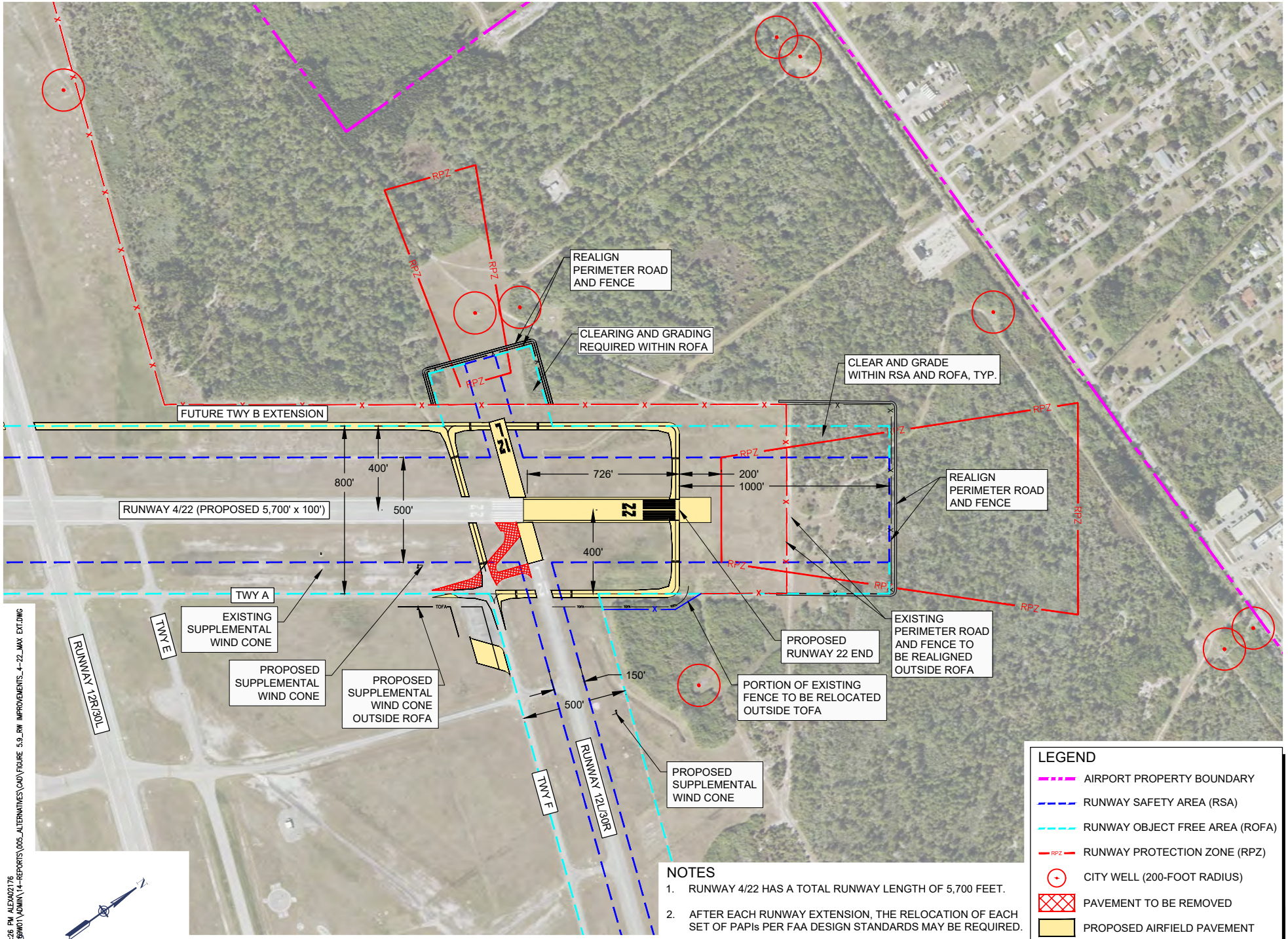
Alternative 2 does not meet the facility requirement of maintaining at least the existing length on Runway 12L/30R; therefore, it is not recommended. Alternative 3 is recommended because it meets FAA design standards and all operational facility requirements and provides the flexibility to extend Taxiway B the full length of an extended Runway 4/22, with a runway centerline to taxiway centerline separation of 400 feet.

It is recommended that Runway 22 be extended at least 326 feet and Runway 12L be extended 700 feet to resolve the overlapping RSAs and provide standard taxiway connectors. This would increase Runway 12L/30R to 4,204 feet and Runway 4/22 to 5,300 feet. These runway extension improvements would eliminate the overlapping RSAs and increase the overall length of Runway 4/22 to reduce limitations on business jet operations on this runway.

The ability to extend Runway 4/22 up to 5,700 feet is recommended, so this alternative should be preserved for ultimate airfield development. Any extension to Runway 22 would require an obstruction analysis and removing any obstructions to the approach to maximize the utility of the additional runway length.

Runway 4/22 Instrument Approach Improvements

Consideration was given to improving the instrument approaches to Runway 4/22 to lower the visibility minimums to as low as or lower than 3/4 of a mile. Because of the location of the existing development on the west side of Runway 4/22, this runway cannot support the 1,000-foot-wide primary surface needed for visibility minimums as low as or lower than 3/4 of a mile. Therefore, the instrument approach visibility minimums for Runway 4/22 should be maintained at 7/8 of a mile or higher.



NOTES

1. RUNWAY 4/22 HAS A TOTAL RUNWAY LENGTH OF 5,700 FEET.
2. AFTER EACH RUNWAY EXTENSION, THE RELOCATION OF EACH SET OF PAPIs PER FAA DESIGN STANDARDS MAY BE REQUIRED.

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 2:26 PM ALEXA02176
I:\20L08S\20A008W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.9_RW IMPROVEMENTS_4-22_MAX EXT.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	EXTENSION OF RUNWAY 22 TO 5,700 FEET
DRAWN BY: JA	CHECKED BY: SZ	FIGURE 5.9	

An airport should own or have an interest in all the land within the RPZ to control the land use. A portion of the Runway 4 RPZ extends off airport property over county-owned property. A large portion of the RPZ is protected by an easement. There is one building within the easement area. However, the Runway 4 RPZ size has increased due to instrument approach improvements since this easement was acquired. VRB should pursue the acquiring additional property interest or at least an easement to protect the larger Runway 4 RPZ. VRB should also pursue acquiring the rights to remove the building within the RPZ.

Runway 4/22 Instrument Approach Improvement Recommendation

The existing development along Runway 4/22 precludes the ability to meet the wider primary surface for instrument approach minimums as low as or lower than 3/4 of a mile. Therefore, the instrument approach visibility minimums for Runway 4/22 are recommended to be maintained at no lower than 7/8 of a mile. It is recommended that VRB pursue acquiring an easement for the larger RPZ over this county-owned property. Also, VRB should pursue acquiring the rights to remove the building within the RPZ.

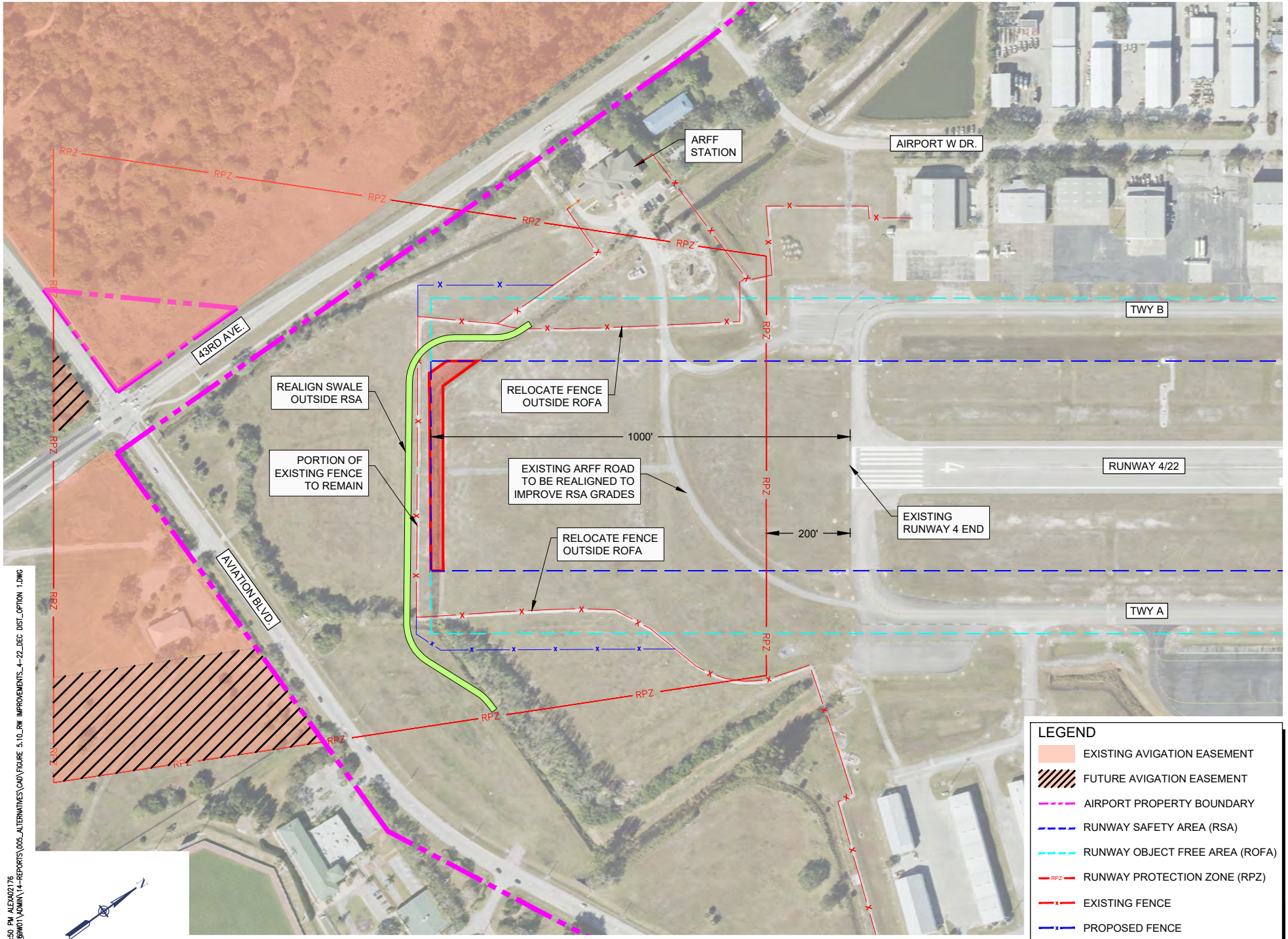
Runway 4/22 Declared Distance Improvements

ARC C/D-II design standards require that the RSA and ROFA extend 1,000 feet beyond the takeoff end of the runway. At the time of this airport master plan, declared distances are published for Runway 4/22. These declared distances are in place due to a drainage swale within 1,000 feet of the physical Runway 4 end. Declared distances of 4,945 feet are implemented on the Runway 22 ASDA and LDA operations to provide a 1,000-foot RSA beyond the declared end of Runway 4 for aircraft taking off and landing on Runway 22. Two alternatives were evaluated to eliminate the declared distances for Runway 22 ASDA and LDA operations.

Alternative 1, shown on **Figure 5.10**, depicts maintaining the location of the Runway 4 end and relocating the drainage swale outside the RSA and ROFA. Portions of the fence on the east and west side of the runway would also be relocated outside the ROFA. Realigning the drainage swale outside the fence would allow easier access for maintenance and assist in keeping wildlife outside the fence. The ARFF access road connecting the station to the airfield passes within the Runway 4 ROFA. As part of this alternative, the overall RSA grades would be improved, including modifications to the ARFF access road. Any changes to the ARFF road would still allow the emergency team to meet the FAA's response time requirements. This alternative does not change the location of the RPZ. The roads within the RPZ would remain. This alternative does not change the runway, so the location of the roads with the RPZ should continue to be acceptable for FAA compliance purposes.

Alternative 2, shown on **Figure 5.11**, relocates the Runway 4 end to the northeast by 29 feet. This relocation would shorten the runway so that the drainage swale is outside the RSA and ROFA. While it would eliminate the declared distances, unless there is a corresponding extension on the other end, it would shorten the overall runway length for all operations instead of just the Runway 22 ASDA and LDA. In addition, this runway end relocation would require the runway to be remarked, the runway end and edge lights to be relocated, guidance signs to be relocated, and taxiway end connectors to be modified. While this alternative moves the RPZ 29 feet to the north, the roads will remain within the RPZ. Because there is a need for additional length on Runway 4/22, reducing the runway length does not meet the facility requirement recommendations.

An extension of the Runway 22 end would be a change to the runway. Therefore, consideration needs to be given to eliminating the roads within the Runway 4 RPZ. The Runway 4 end would need to shift 1,172 feet so that 43rd Avenue would be outside the Runway 4 RPZ. The shift of the RPZ would impact existing development, introducing additional incompatible land use along Taxiway B and decreasing the overall Runway 4/22 length to 3,802 feet.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

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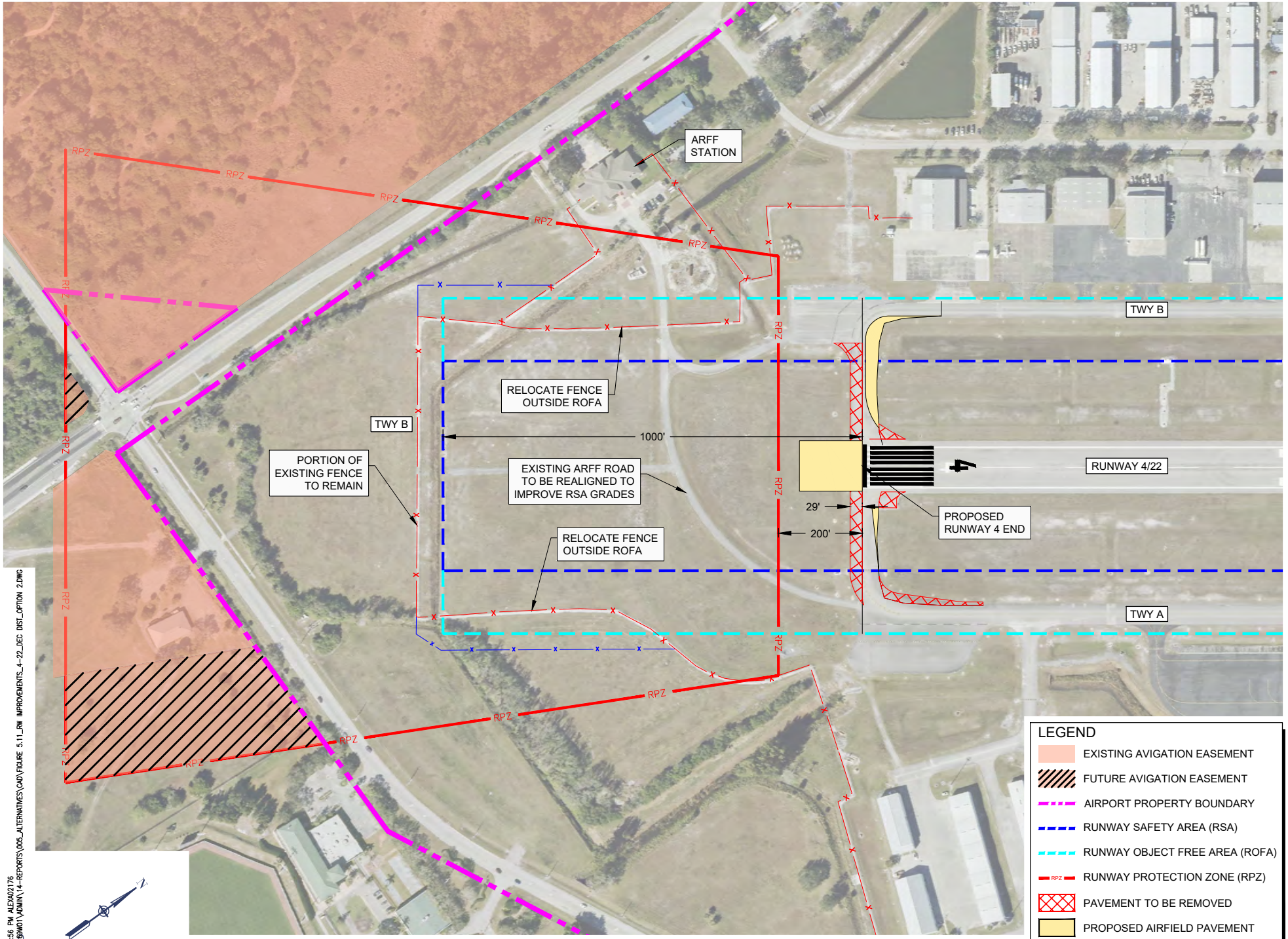
I:\20L08S\20A008W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.10_RW IMPROVEMENTS_4-22_DEC DIST_OPTION 1.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	ALTERNATIVE 1 RUNWAY 4/22 POTENTIAL DECLARED DISTANCES IMPROVEMENTS
DRAWN BY: JA	CHECKED BY: SZ	FIGURE 5.10	



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

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I:\20J08S\20A008W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.11_RW IMPROVEMENTS_4-22_DEC DIST_OPTION 2.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

ALTERNATIVE 2
RUNWAY 4/22 POTENTIAL
DECLARED DISTANCES IMPROVEMENTS

DRAWN BY: JA
CHECKED BY: SZ

FIGURE 5.11

Therefore, shifting Runway 4/22 to the north to remove the roads is not feasible. The maximum shift of Runway 4/22 without impacting on-airport development is 100 feet, as depicted on **Figure 5.12**. This shift does not remove any roads.

Runway 4/22 Declared Distances Recommendation

The no-build condition meets FAA design standards and can remain. However, to maximize the use of the existing runway pavement, Alternative 1 is recommended. Alternative 1 maintains the length and enhances the margin of safety by relocating the drainage swale outside the RSA.

Runway 12L/30R

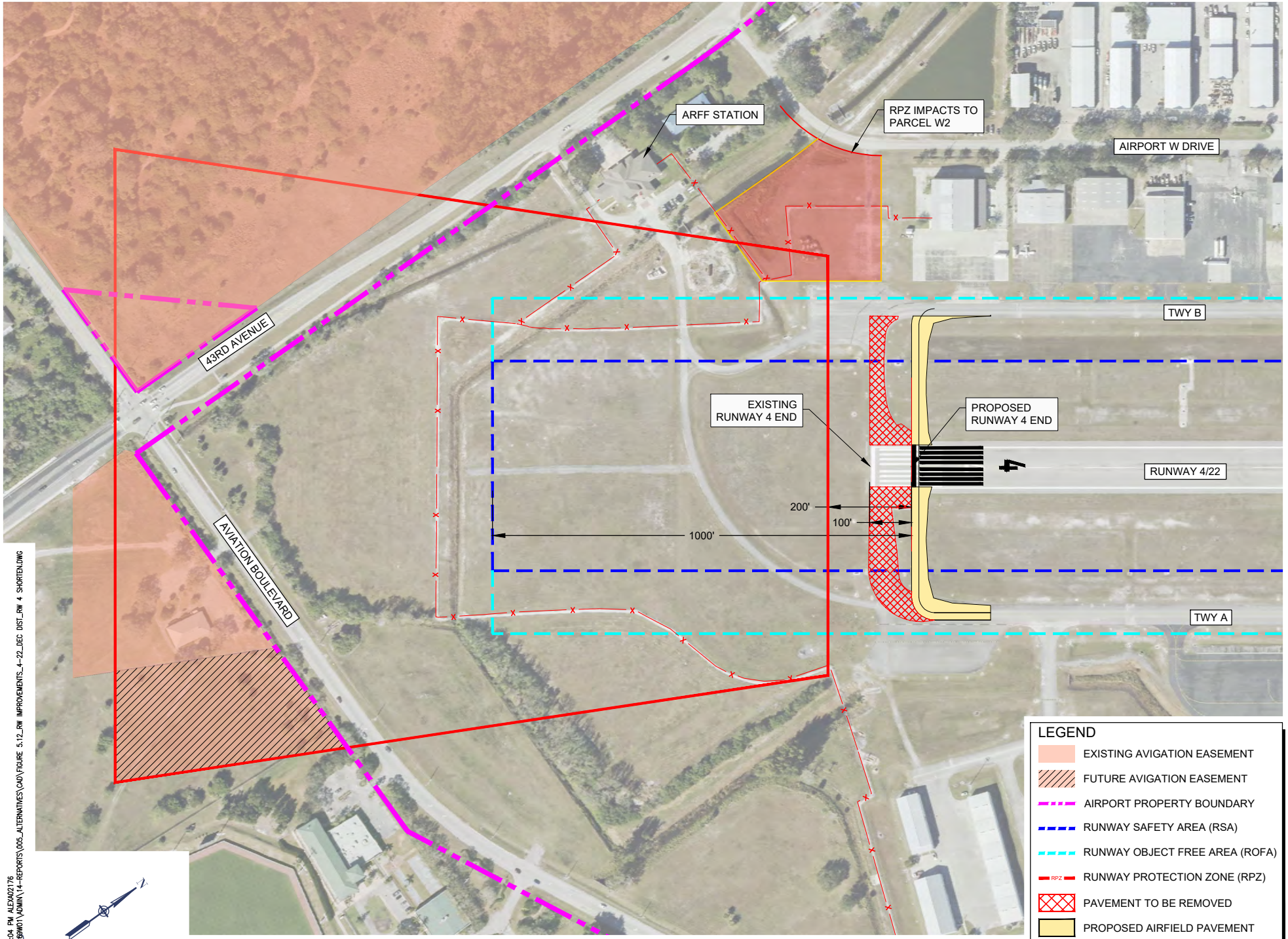
Runway 12L/30R is a secondary runway, critical to providing operational capacity at VRB. It serves as a parallel runway to the primary runway. This runway is 3,504 feet long by 75 feet wide. Based on the critical aircraft for Runway 12L/30R of a King Air 200, the length and width of the runway is sufficient, but no reduction in length is acceptable. Although the runway length is sufficient for existing and forecasted operations, future runway length improvements are recommended to mitigate the overlapping RSAs, as discussed for Runway 4/22. The extension to Runway 12L/30R to mitigate the overlapping RSAs would provide an additional margin of safety for twin-engine aircraft operating on this runway.

Runway Visibility Zone Improvements

With a part-time ATCT, there are runway visibility zones (RVZ) around the intersection of runways or extended runway centerlines to allow pilots a clear line of sight to see other aircraft on the intersecting runway. The facility requirements identified that there are aircraft and helicopter parking positions within the RVZ of runways 12R/30L and 4/22. These parking positions are within the leasehold of the flight schools.

RVZ Improvement Recommendation

The no-build condition results in aircraft parking within the RVZ when the tower is closed. Steps should be taken to eliminate or at least reduce aircraft parking within the RVZ. Until the leases can be modified and/or other parking areas developed, the airport staff should work with the flight schools to keep these parking positions vacant, when feasible, outside the ATCT operating hours by first using other parking positions within their leasehold.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 3:04 PM ALEXA02176
I:\20J08S\20A0089W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.12_RW IMPROVEMENTS_4-22_DEC DIST_RW 4 SHORTEN.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	RUNWAY 4/22 SHIFT 100 FEET TO THE NORTH
DRAWN BY: JA	CHECKED BY: SZ	FIGURE 5.12	

5.2. Taxiway System

The facility requirements chapter identified potential improvements to the taxiways at VRB. Each improvement is discussed in the following sections. The goal is to identify improvements to the taxiway system to meet the latest FAA design standards while maintaining operational safety and efficiency.

Taxiway system facility requirements

- Establish a standard taxiway connector to Runway 22 (as discussed previously).
- Establish alphanumeric names on taxiway end connectors.
- Eliminate direct apron-to-runway taxiway connectors.
- Improve an FAA-identified hot spot where Taxiway C crosses Runway 4/22.
- Provide a bypass taxiway at each end of Runway 12R/30L.

Table 5.2 identifies the taxiway design standards for VRB that will be used to assess taxiway alternatives.

TABLE 5.2: SUMMARY OF TAXIWAY DESIGN STANDARDS RUNWAY

Runway	Taxiway Design Group (TDG)		Taxiway Width
	Existing	Future	
Runway 12R/30L	TDG 3		50 feet
Runway 4/22	TDG 2A		35 feet
Runway 12L/30R	TDG 2A		35 feet

Sources: VRB Airport Master Plan: Forecast Chapter, prepared by ESA, 2023; FAA AC 150/5300-13B.

Figure 5.13 shows the potential taxiway improvements from the previously approved ALP that have not been implemented and are being reviewed for continued applicability. Each potential improvement will be discussed with its applicable taxiway in the following sections.

Taxiway A

Taxiway A is a full-length parallel taxiway on the east side of Runway 4/22. Taxiway A varies in width from 35 feet to 50 feet, which meets TDG 2A standards of 35 feet wide. North of Taxiway A1, Taxiway A has a runway centerline to taxiway centerline separation of 400 feet. The portion of Taxiway A south of Taxiway A1 has a runway to taxiway centerline separation of 350 feet. This separation meets ADG-II standards with visibility minimums not lower than 3/4 of a mile. However, a 350-foot separation limits the use of this portion of Taxiway A to ADG-II aircraft. Because there is an existing apron along the portion of Taxiway A with the 350-foot separation and it meets ADG II standards for the critical aircraft using Runway 4/22, the existing condition could be acceptable. Even though realigning the southern portion of Taxiway A with a 400-foot separation would impact an apron and aircraft parking positions, the advantages and disadvantages of realigning Taxiway A should be discussed further as part of evaluating all the alternatives. Considerations include the potential use of this portion of taxiway by larger aircraft compared to the construction cost and impacts to other facilities. The potential realignment of Taxiway A is depicted on **Figure 5.14**. Whether or not the separation is increased for the southern portion of Taxiway A, maintaining the other portion at a 400-foot separation provides maximum flexibility.

Taxiway A1 comprises two portions and provides direct apron-to-runway access. One portion is between Taxiway A and Runway 4/22. The other is a small stub connector between Taxiway A and the Skyborne Airline Academy south apron. One of the two segments should be relocated to eliminate the direct runway-to-taxiway connection. The previous ALP recommended relocating the smaller stub connector between Taxiway A and the Skyborne Airline Academy south apron, as depicted on Figure 5.14.

Taxiway A2 connects at the Runway 22 end at an angle other than 90 degrees. This taxiway connector reconfiguration would be addressed when mitigating the overlapping RSAs between runways 4/22 and 12L/30R, as detailed in the Runway 4/22 section.

The taxiway end connector at the Runway 4 end is designated as Taxiway A. Redesignating it to align with FAA standards for alphanumeric numbering for connector taxiways should be considered, as described in the facility requirements chapter. The other connecting taxiways would be redesignated as needed to support this change.

Taxiway A Recommendations

The no-build condition for taxiways A1 and A2 and the end connector designation do not meet the latest FAA design standards. Therefore, it is recommended to relocate the stub connector between Taxiway A and the Skyborne Airline Academy to remove the direct apron-to-runway connection. Relocating this portion is the lowest-cost solution because it is the shorter segment. As discussed previously, runways 4/22 and 12L/30R are recommended to be extended to allow for the construction of standard taxiway end connectors that are 90 degrees to runway centerline. The Taxiway A connector at the end of Runway 4 should be redesignated to Taxiway A1 to align with FAA standards, and the other connectors should be renamed to support this change. As part of renaming the taxiway connector, the text on the guidance sign at the connector will need to be updated. This update, as with any guidance sign updates, should be coordinated to occur with other improvements to the taxiway in the same area. Further consideration should be given to the potential benefits of relocating the portion of Taxiway A with a 350-foot runway centerline to taxiway centerline separation.

41ST STREET - SOUTH GIFFORD ROAD

43RD AVENUE

U.S. ROUTE 1

REDESIGNATE TAXIWAY

REDESIGNATE TAXIWAY

RUNWAY 12L-30R

TWY F

RUNWAY 4-22

TWY D

FAA HOTSPOT 1

RUNWAY 12R-30L

TWY E

TWY C

TWY B

TWY A

CITY WATER/SEWER TREATMENT PLANT

REDESIGNATE TAXIWAY

PIPER AIRCRAFT

MAIN RELIEF CANAL

LEGEND

AIRPORT PROPERTY BOUNDARY

AREAS FOR POTENTIAL IMPROVEMENTS

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GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 3:15 PM ALEXA02176
I:\20JOBS\20A0089W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.13_TW IMPROVEMENTS_NONCOMP.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

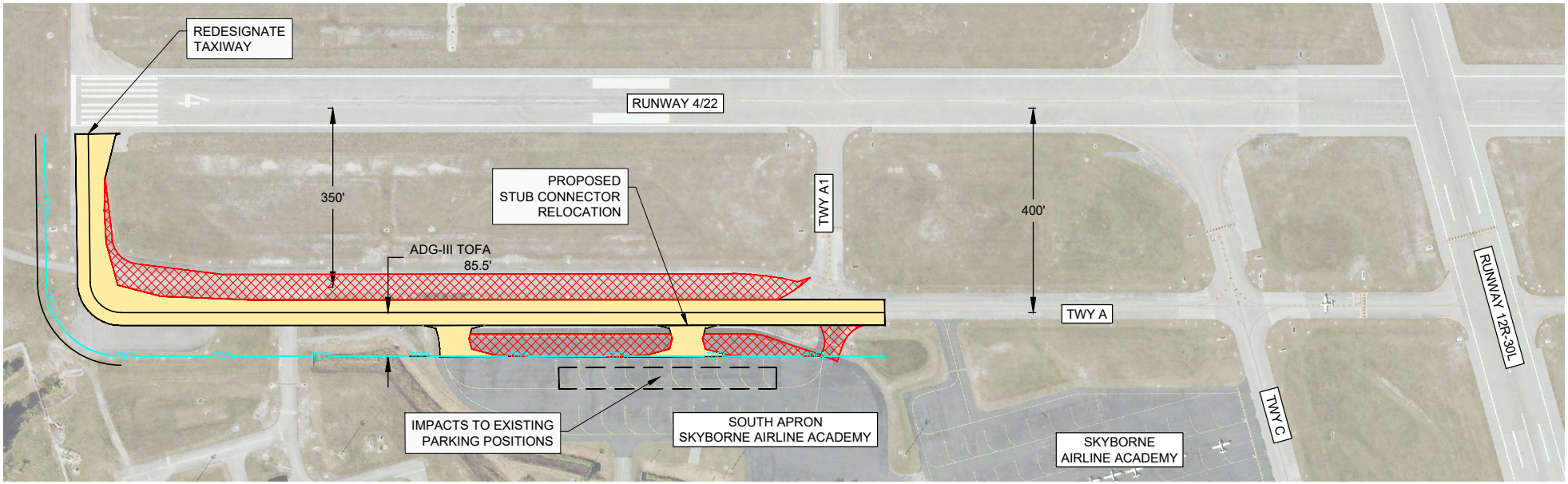
VERO BEACH REGIONAL AIRPORT MASTER PLAN

PREVIOUS ALP RECOMMENDED TAXIWAY IMPROVEMENTS

DRAWN BY: JA

CHECKED BY: SZ

FIGURE 5.13



LEGEND

- AIRPORT PROPERTY BOUNDARY
- PROPOSED AIRFIELD PAVEMENT
- PAVEMENT TO BE REMOVED

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GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 3:20 PM ALEXA02176
I:\20J08S\20A00869W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.14_TW IMPROVEMENTS_TW A.DWG

VERO BEACH REGIONAL AIRPORT / HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	TAXIWAY A IMPROVEMENTS	DRAWN BY: JA CHECKED BY: SZ
			FIGURE 5.14

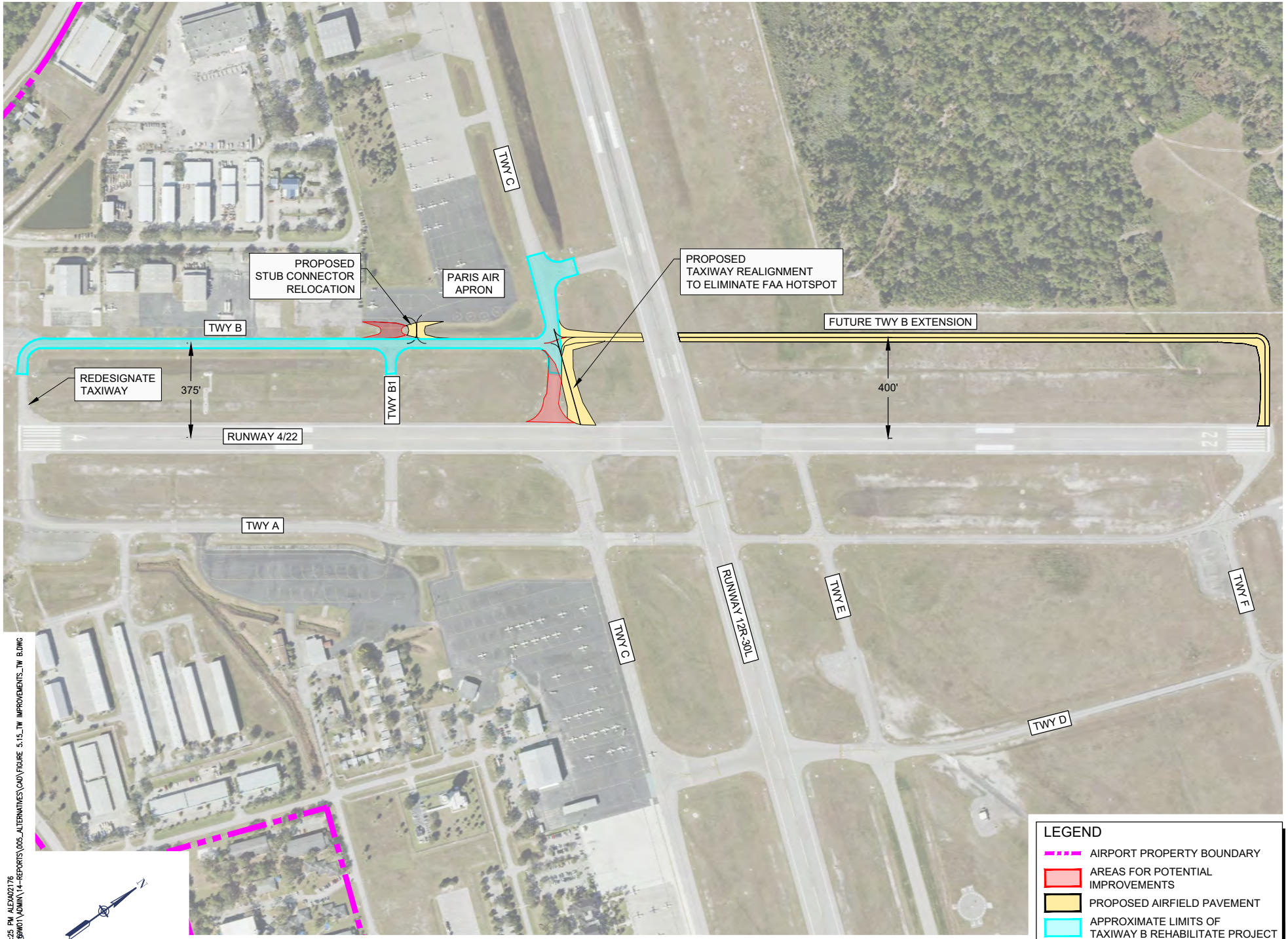
Taxiway B

Taxiway B is a partial parallel taxiway on the west side of Runway 4/22. The taxiway is 35 feet wide and meets TDG 2A standards. It has 375 feet for its runway centerline to taxiway centerline separation. This exceeds ARC C/D-II standards but is short of ARC III standards.

At the time of this airport master plan, an ongoing project to rehabilitate Taxiway B includes relocating the stub connector at Taxiway B1 to eliminate the direct runway-to-apron access. It also includes adding runway guard lights at the hold lines on Taxiway C on each side of Runway4/22. **Figure 5.15** shows the relocation of the stub connector and the approximate limits of the rehabilitation.

VRB has undeveloped land west of Runway 4/22 and north of Runway 12R/30L. As this area is developed, extending Taxiway B 2,600 feet to the end of Runway 22 should be considered to minimize runway crossings and increase taxiway efficiency and airfield circulation. Because Taxiway B south of Runway 12R/30L has a 375-foot separation, the extended taxiway could be built with the same separation or the standard ARC C/D-II or C-D-III separation. Extending Taxiway B with the same separation would avoid a jog in the taxiway. Extending Taxiway B with a 300-foot separation would provide maximum space for future airside development but limit the use of the taxiway to ADG-II aircraft and create a jog in the taxiway. Extending Taxiway B with a 400-foot separation would lessen the jog in the taxiway and allow up to ADG-III aircraft to use the parallel taxiway. As such, the 400-foot separation would provide the most flexibility and, therefore, efficiency to taxiway movements at VRB.

The taxiway end connector at Runway 4 is designated as Taxiway B. Consideration should be given to redesignating it to align with FAA standards, with the other connecting taxiways renamed to allow for this redesignation.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 3:25 PM ALEXA02176
I:\20J08S\20A0089W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.15_TW IMPROVEMENTS_TW B.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	TAXIWAY B IMPROVEMENTS

DRAWN BY:	JA	FIGURE 5.15
CHECKED BY:	SZ	

Taxiway B Recommendations

With undeveloped land that could accommodate up to ADG-II aircraft adjacent to where Taxiway B, Taxiway B should be extended and constructed with an FAA-standard runway centerline to taxiway centerline separation of 400 feet. In addition to being a standard separation distance, taxiing from a portion of a 375-foot separation to a 400-foot separation minimizes the change, compared to a change to a 300-foot separation.

It is recommended that the Taxiway B end connector at Runway 4 be redesignated and the other taxiway connectors renamed to align with FAA design standards. A future end connector at Runway 22 would also have an alphanumeric designation.

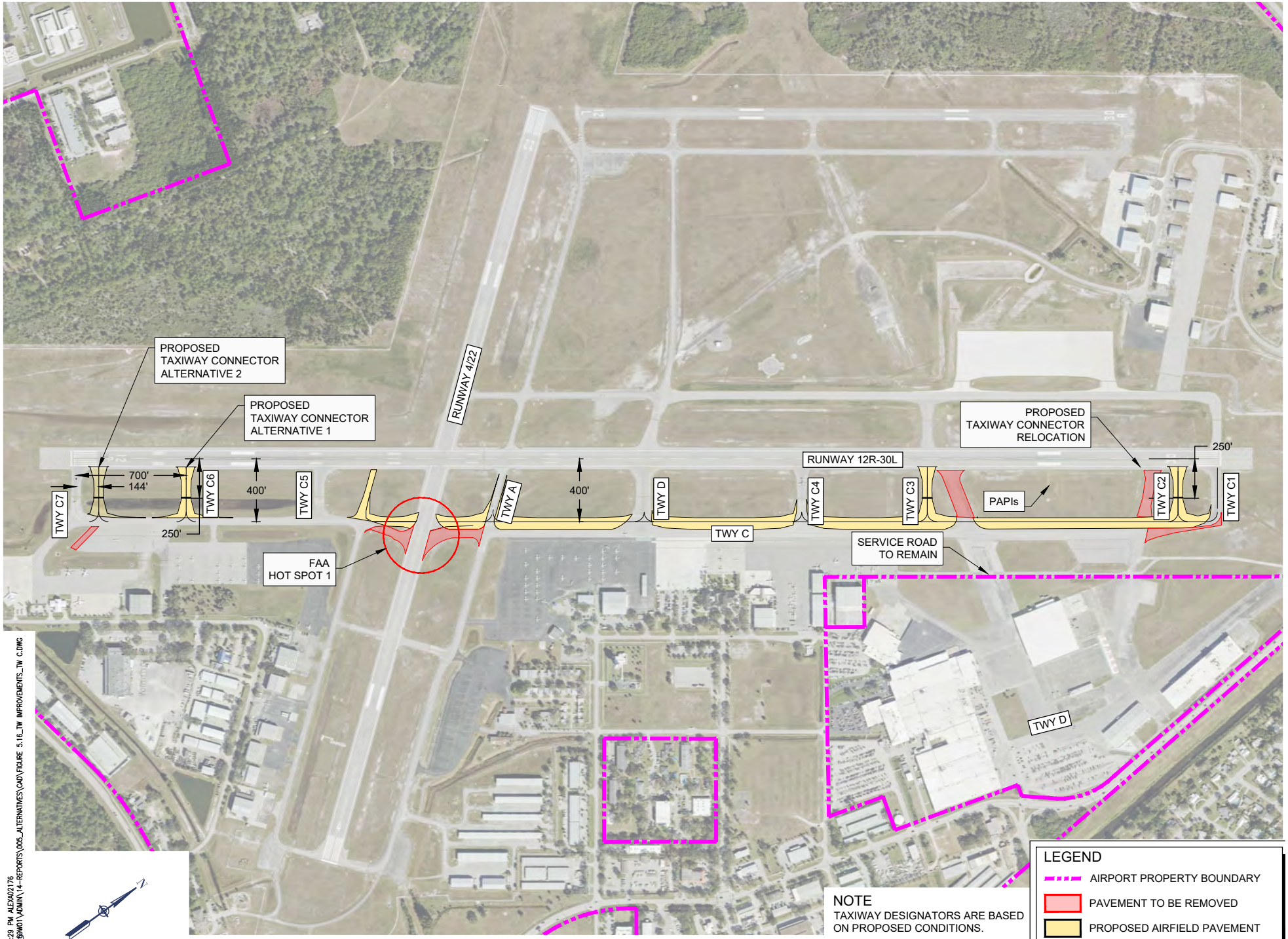
Taxiway C

Taxiway C is a full-length parallel taxiway on the south side of Runway 12R/30L. The taxiway is 50 feet wide and meets TDG 3 standards. Taxiway C varies from a 400-foot to a 475-foot runway centerline to taxiway centerline separation. The 400-foot runway to taxiway centerline separation meets ADG III standards and would support an approach with less than 3/4 of a mile of visibility. Taxiway C jogs to change separation at Runway 4/22, which is an FAA hot spot. To eliminate the jog in Taxiway C, Taxiway C should be realigned to the standard 400-foot separation for the entire length. This shift would improve the FAA-identified hot spot, where the taxiway separation from the runway changes, and provide the potential to develop additional apron space around the terminal area. **Figure 5.16** shows the potential improvement to Taxiway C. As part of relocating Taxiway C, the portion of Taxiway C from taxiways C1 and C2 would be realigned to be parallel to Runway 12R/30L.

Taxiway C1 is an end connector at Runway 30L, and the corner of the taxiway is squared. Per FAA standards, taxiway end connectors should be rounded to differentiate between a runway and taxiway. Consideration should be given to improving the no-build condition to meet the latest FAA design standards.

Taxiway C2 connects with Runway 30L at an angle other than 90 degrees and provides direct runway-to-apron access from Piper Aircraft. It is used by ATC as a bypass taxiway to allow aircraft to continue to depart Runway 30L if an aircraft is holding on Taxiway C1.

To eliminate the direct runway-to-apron access, Taxiway C2 should be relocated. The relocated Taxiway C2 should be 90 degrees to the runway centerline and relocated east of the hold pad to avoid a direct apron-to-runway connection, while positioning it to continue to serve an end bypass taxiway. The relocation of Taxiway C2 needs to meet the standards for parallel taxiway centerline to parallel taxiway centerline separation. The standard taxiway centerline to taxiway centerline separation is 144.5 feet for ADG III, 207 feet for ADG-IV, and 249 feet for ADG-V. The critical aircraft for Runway 12R/30L is ARC C/D-III. However, the runway centerline to taxiway centerline separation can serve larger aircraft. Therefore, in case of occasional use by larger aircraft, increasing the taxiway centerline to taxiway centerline separation up to 249 feet should be considered. Because the length of the taxiway will not change, only its location, there should be no cost difference to increase the separation between the two connecting taxiways. As part of relocating Taxiway C2, some stormwater modifications will be needed because there is a dry detention between taxiways C1 and C2. This stormwater detention could be shifted to the other side of the relocated Taxiway C2 to maintain the capacity.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

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I:\20J08S\20A008W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.16_TW IMPROVEMENTS_TW C.DWG

VERO BEACH REGIONAL AIRPORT / HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	TAXIWAY C IMPROVEMENTS	DRAWN BY: JA CHECKED BY: SZ	FIGURE 5.16

If an aircraft is holding at the end of Runway 12R, such as for an instrument flight plan clearance, no bypass taxiway is available. To help reduce departure delays behind a holding aircraft, a bypass taxiway should be constructed near the end of Runway 12R. With the location of the hold pad at the end of Runway 12R, this taxiway would need to be east of the hold pad, or the hold pad would need to be modified or removed to avoid a direct apron-to-runway connection. To maintain the hold pad, the bypass taxiway would need to be approximately 700 feet from the end connector to avoid a direct runway connection. This exceeds the minimum separation for up to ADG-V aircraft. It would provide a shorter runway length, which would be adequate for all the training operations at VRB. Larger aircraft using the bypass taxiway would need to back-taxi if they need the entire runway length. To locate the bypass taxiway close to the end of Runway 12R, the hold pad would be shortened to avoid a direct runway connection. Any taxiway connector near the end of Runway 12R would require modifications to the drainage swale between Taxiway C and Runway 12R/30L.

Where there are large expanses of pavement, such as an apron adjacent to connector taxiways, the FAA allows green “islands” to be painted on the pavement so pilots can taxi around the island, which necessitates a turn between the apron and runway. Green islands are in place at taxiways C4 and D south of Taxiway C. This no-build condition meets FAA standards, so no changes are needed.

Taxiway C Recommendations

To improve the FAA-identified hot spot and maximize the space south of Taxiway C, a portion of Taxiway C with the larger separation, east of Taxiway B, should be relocated to have a runway-to-taxiway separation of 400 feet.

To meet FAA design standards and help landing pilots differentiate between the runway and taxiway end, the end of Taxiway C1 should be rounded. The change could occur when Taxiway C1 is rehabilitated or when Taxiway C is realigned to 400-foot separation. To eliminate the direct runway-to-apron access, Taxiway C2 should be relocated to have at least a 249-foot taxiway centerline to taxiway centerline separation from Taxiway C1.

With the projected increasing operations at VRB, a bypass taxiway should be developed near the end of Runway 12R. This would allow ATC to route departing aircraft around a holding aircraft to maximize the capacity of the runway. To preserve the hold pad that is used for engine run-ups by training aircraft, the bypass taxiway should be located east of the hold pad, with the appropriate stormwater modifications.

Taxiway D

Taxiway D provides crossfield access from the Skyborne apron south of Runway 12R/30L to runways 12L, 30R, and 22 on the north side of the airfield. The portion of Taxiway D between Taxiway C and Runway 12R/30L is 75 feet wide, and Taxiway D north of Runway 12R/30L is 35 feet wide, which meets TDG 2A standards. Taxiway D is primarily used for access to Runway 12L/30R, an ARC B-II small runway. Therefore, no changes to Taxiway D are needed.

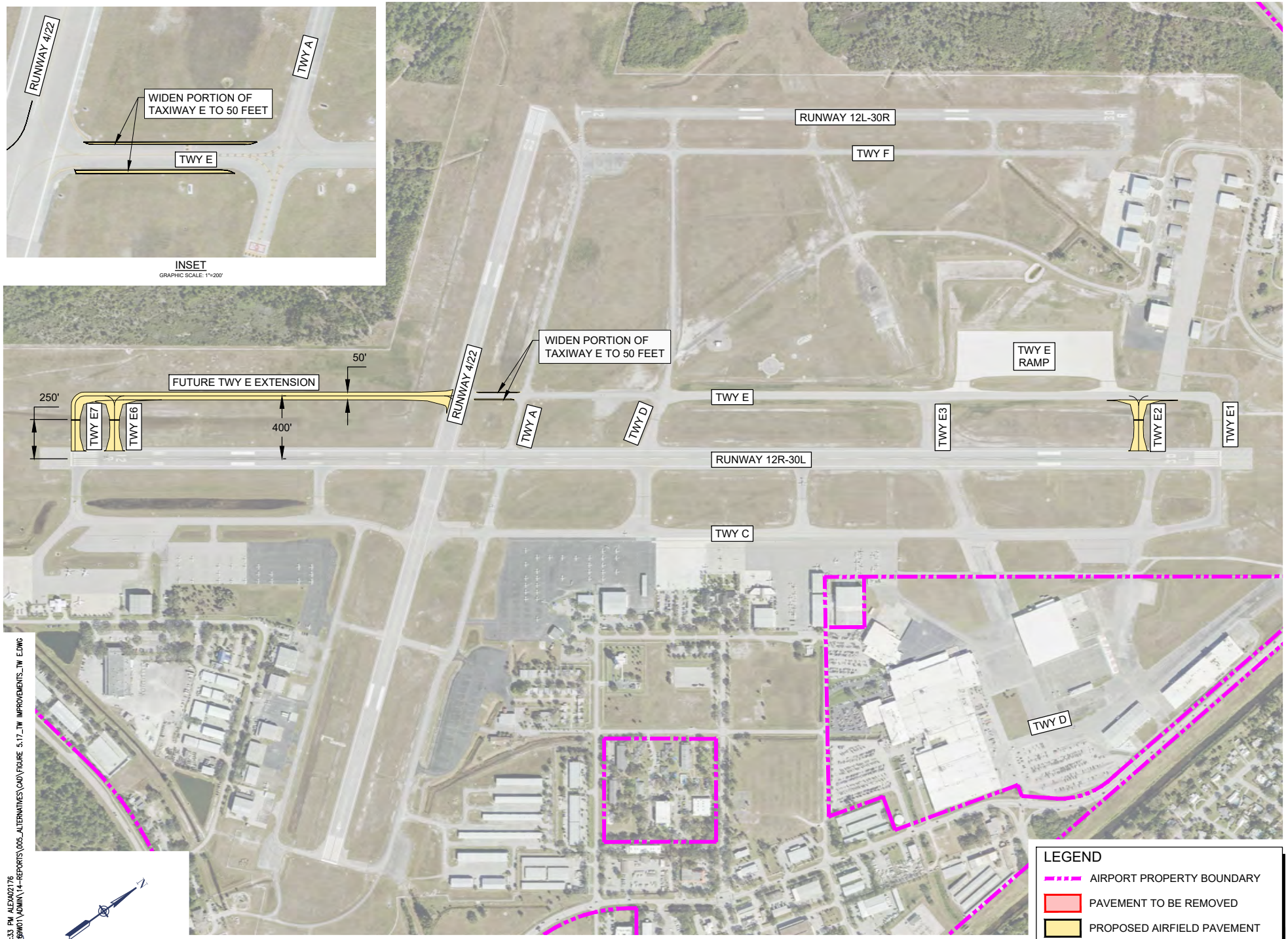
Taxiway E

Taxiway E is a partial parallel taxiway on the north side of Runway 12R/30L. Taxiway E has 400-foot separation runway centerline to taxiway centerline, meeting FAA design standards for ARC C/D-III aircraft. This taxiway is 50 feet wide from the Runway 30L end to Taxiway D. However, west of Taxiway D to Runway 4/22, Taxiway E is 40 feet wide. Because Taxiway E serves the primary runway, it should be able to accommodate TDG-3 aircraft, which require 50-foot-wide taxiways. Therefore, as shown on **Figure 5.17,** to meet TDG 3 standards, the portion of Taxiway E west of Taxiway D to Runway 4/22 should be widened to 50 feet. Widening this portion of Taxiway E would provide more routes for aircraft to access the ongoing development north of Runway 12R/30L, increasing the efficiency of the airfield.

Additional hangar development is ongoing north of Runway 12R/30L. To avoid crossing Runway 12R/30L for these aircraft to reach the end of Runway 12R and to increase taxiway efficiency and airfield circulation, extending Taxiway E 2,400 feet to the Runway 12R end, maintaining a runway to taxiway centerline separation of 400 feet for ADG-III aircraft, should be considered. This taxiway extension could serve future development in the undeveloped area north of Runway 12R/30L and west of Runway 4/22. If development on the north side is warranted in the future, bypass taxiways similar to those on Taxiway C could be developed on Taxiway E.

<u>Taxiway E Recommendations</u>

To meet FAA design standards, Taxiway E between Taxiway D and Runway 4/22 should be widened to 50 feet. It is also recommended to extend Taxiway E the full length of Runway 12R/30L. This extension would increase the margin of safety for airside development north of Runway 12R/30L by providing access to both ends of Runway 12R/30L without crossing the runway. It would minimize aircraft taxiing across Runway 12R/30L, maximizing the capacity of the runway for takeoffs and landings.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 3:33 PM ALEXA02176
I:\20J08S\20A008W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.17_TW IMPROVEMENTS_TW E.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	TAXIWAY E IMPROVEMENTS

DRAWN BY:	JA	FIGURE 5.17
CHECKED BY:	SZ	

Taxiway F

Taxiway F is a full-length parallel taxiway on the south side of Runway 12L/30R. This taxiway has a 240-foot runway centerline to taxiway centerline separation, meeting ARC B-II small standards. This taxiway is 35 feet wide and meets TDG 2A standards. At the time of the airport master plan, both taxiway end connectors are designated Taxiway F. To align with FAA standards, the end connectors should be redesignated with alphanumeric names.

Unless there is development proposed for the north side of Runway 12L/30R as part of the airside alternatives, Taxiway F provides sufficient access for Runway 12L/30R, and an additional parallel taxiway would not be needed on the north side.

Taxiway F Recommendations

The Taxiway F end connectors should be redesignated and existing taxiways F1 and F2 should be redesignated, as needed, to align with FAA design standards.

Engine Run-Up Pads

With the high level of training at VRB, there are engine run-up pads near each runway end on at least one side. FAA AC 150/5300-13B recommends locating engine run-up areas away from parking positions, gate areas, and buildings, as well as locating them to minimize exposure to engine exhaust and noise.

Engine Run-Up Pad Recommendations

If the location of the run-up pads does not conflict with access to the airfield, they should remain. Access through a run-up pad to the parallel taxiway should be avoided. If it cannot be avoided, the run-up pad should be modified or removed. If any run-up pad needs to be removed to support airside development, VRB should work with the tenants to designate alternate run-up locations to avoid aircraft blocking the taxiway to conduct an engine run-up.

Taxiway Lighting

All taxiways are equipped with MITLs and are LED. Some airfield signs have been upgraded to LED; however, the remaining incandescent signs should be upgraded to LED in future lighting projects. Updating a sign to LED should be coordinated with renaming connector taxiways.

5.3. Navaids and Weather Equipment

Rotating Beacon

The rotating beacon is on the north side of Runway 12L/30R. It is accessed via an unpaved road and surrounded by dense vegetation, which causes difficulty to access and maintain. Relocating the rotating beacon to an area more accessible for routine maintenance has been identified as a need. Per FAA AC 150/5300-13B, an airport beacon should be within 5,000 feet of all runways, be above surrounding objects, and avoid interference with pilots' or ATCT controllers' vision. To avoid the potential of the flashing beacon being visible in the ATCT, sites with the areas southeast of the runways were avoided. An airport beacon is not considered fixed by function, so it needs to be clear of all runway and Part 77 design surfaces. **Figure 5.18** shows potential sites that would have minimal visual impacts to ATCT staff and pilots. The ongoing development at VRB is depicted on Figure 5.18, and these areas are not available for the relocation of the rotating beacon. The ATCT also requested that the beacon is not located on top of the tower due to maintenance considerations.

Potential Site 1 locates the rotating beacon north of Runway 12L/30R. The site is in an area clear of vegetation and can be accessed by the airfield perimeter road.

Potential Site 2 locates the rotating beacon to west of the airfield, near the Paris Air ramp. This location is within the Paris Air leasehold and could impact future development.

Potential Site 3 is along 43rd Avenue. It would be near an access point from 43rd Avenue. The height of the surrounding vegetation would need to be checked and potentially reduced. Its location would need to be coordinated with any future development plan to avoid impacts. Power would also need to be extended to this site.

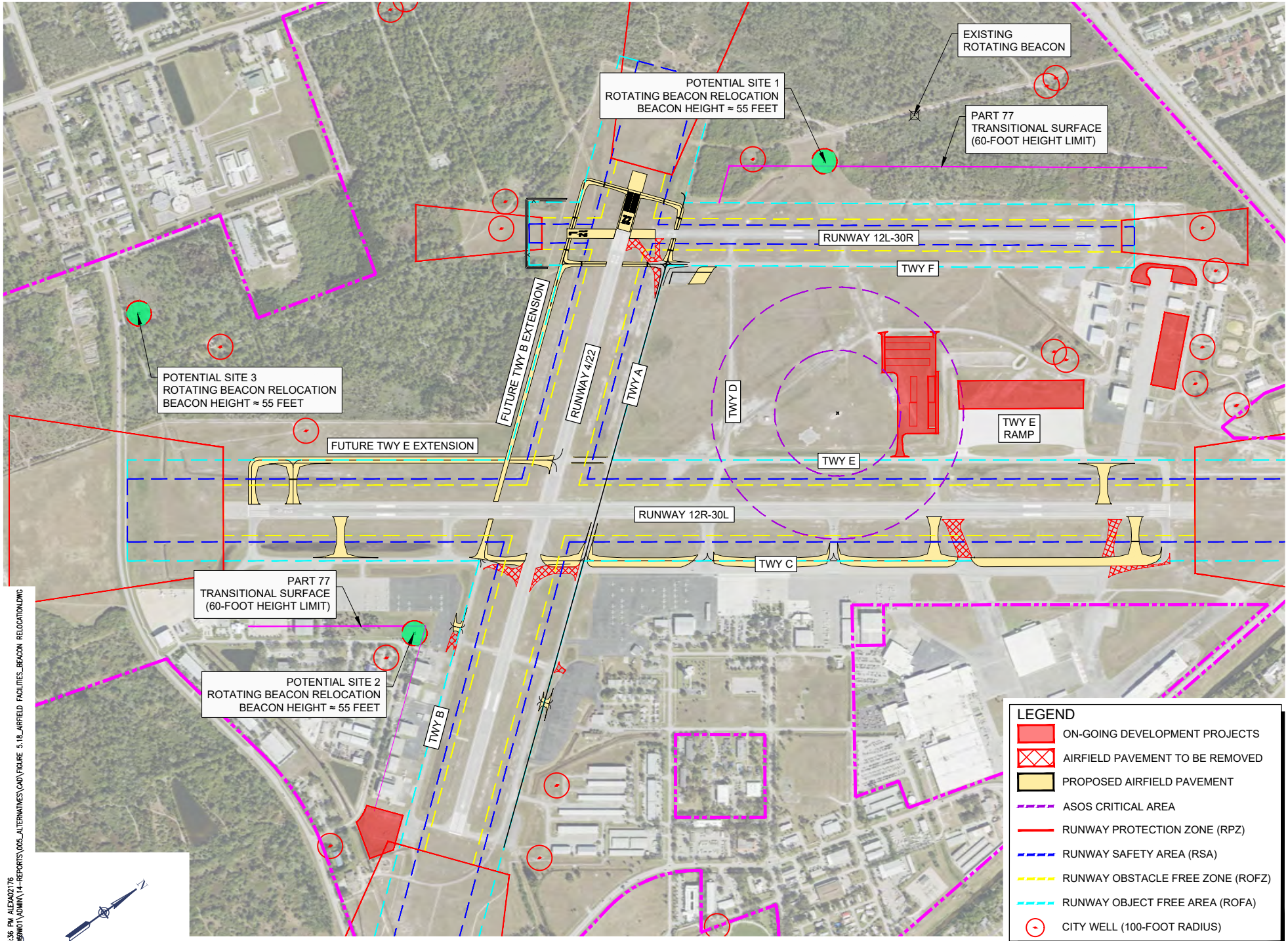
Rotating Beacon Recommendation

The no-build alternative for relocating the beacon is not considered feasible, because it does not address the difficulty accessing the site for maintenance. To improve the ease of maintaining the beacon, the rotating beacon should be relocated to Site 1 to provide better accessibility while minimizing visual impacts for controllers and pilots. Site 3 would also be a viable alternative if power is provided to the site.

ASOS

The ASOS is in the midfield, east of Taxiway D and north of Taxiway E. The midfield area is prime for hangar development, with utilities already in place. However, due to the height-restrictive critical areas around the ASOS and the ATCT's line of sight to Runway 12L/30R, future development in the midfield area is limited. The ATCT's line of sight will not change, but the relocation of the ASOS could open developable areas.

The ASOS is a National Weather Service (NWS)-owned system. VRB would need to work with the NWS to relocate the ASOS. If the NWS is not willing to relocate the ASOS, VRB could consider installing an AWOS that provides the same function but is airport-owned. The NWS siting criteria are not publicly available. Therefore, the relocation of the ASOS was evaluated per FAA Order 6560.20C. For airports with visual and/or nonprecision runways, the preferred siting area is adjacent to the primary runway, 1,000 feet to 3,000 feet from the threshold and 500 feet to 1,000 feet perpendicular from the runway centerline, with the critical areas clear. For an airport with a precision runway, the location is a minimum of 750 feet not to exceed 1,000 feet from the runway centerline. If the wind sensor site is above this, the minimum separation is increased by 7 feet for every foot the sensor site elevation is above the runway elevation. Each sensor in the system has its own specified clearances, but the most restrictive is the wind sensor. All obstructions must be at least 15 feet lower than the height of the wind sensor that is 30 to 33 feet above the average ground height within a 500-foot radius, and they must be at least 10 feet lower than the sensor where the radius is 500 feet to 1,000 feet. The ASOS location should not be subject to jet blast from engine run-ups or taxiing. A relocated ASOS should remain clear of the RVZ. There is an FAA stand-alone weather sensors system collocated with the ASOS that serves as a backup system for the ASOS. It should be relocated with the ASOS.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

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I:\20L08S\20A008W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.18_AIRFIELD FACILITIES_BEACON RELOCATION.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

SITES FOR ROTATING BEACON RELOCATION

DRAWN BY: JA
CHECKED BY: SZ

FIGURE 5.18

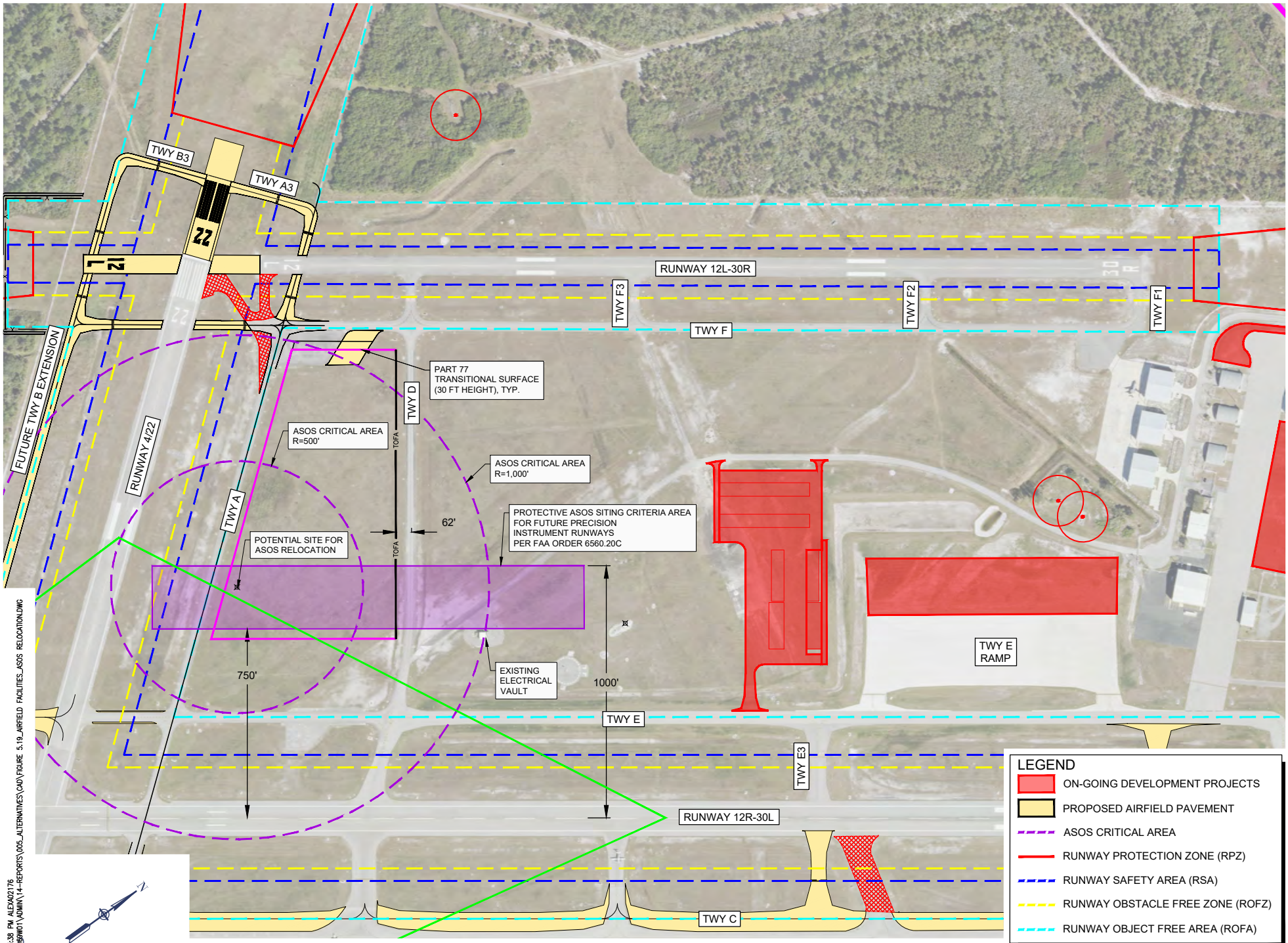
There are three alternatives for the ASOS. The first is no-build and keep the ASOS in its existing location. However, without the relocation of the ASOS, VRB has little to no remaining developable airside area without utility improvements.

The second alternative is between taxiways A and D. The space between taxiways A and D is limited to future aeronautical development due to height restrictions but could accommodate the ASOS while providing sufficient clearance for the wind sensor, as depicted on **Figure 5.19**.

The third option is to locate the ASOS northwest of runways 12R/30L and 4/22 in the undeveloped area. Relocating the ASOS to this area would require tree clearing and would impact future development opportunities.

ASOS Recommendation

The no-build condition of keeping the ASOS in its existing location does not provide the highest and best use of VRB property. Further, relocating the ASOS northwest of runways 12R/30L and 4/22 would limit future development and not provide the highest and best use of VRB property. Relocating the ASOS between taxiways A and D meets the siting criteria and makes good use of an area that cannot be used for airside development. Therefore, relocating the ASOS between taxiways A and D is recommended.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 3:38 PM ALEXA02176
I:\20L08S\20A06BW01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.19_AIRFIELD FACILITIES_ASOS RELOCATION.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN	SITE FOR ASOS RELOCATION	DRAWN BY: JA CHECKED BY: SZ	FIGURE 5.19

Segmented Circle and Wind Cones

VRB is equipped with a primary lighted wind cone and segmented circle north of Taxiway E and east of Taxiway D. To provide the best use and flexibility for future midfield development, the relocation of the segmented circle and lighted wind cone is suggested. Due to height restrictions for future development and to maintain a clear RVZ, a potential future site would be in between Taxiways A and D. Because the segmented circle and lighted wind cone is visual navaid, it would be fixed by function with the RVZ.

There are also six supplemental wind cones, two for each runway, on the left side of the runways. During the inventory data collection, the supplemental wind cones for runways 12R/30L, 12L/30R, and 4 were operational, and no changes are needed. However, the supplemental wind cone at the Runway 22 end needs to be replaced. Before it is replaced, it should be evaluated to identify the most appropriate long-term location.

Appendix A in FAA AC 150/5340-30J: Design and Installation Details for Airport Visual Aids requires that the supplemental wind cone be 1,000 feet (plus or minus 500 feet) from the runway end. A location is proposed 500 feet from the existing Runway 22 end and 1,226 feet from the end of Runway 22 if it is extended to 5,700 feet. As long as the Runway 22 end does not shift to the southwest, the proposed supplemental wind cone location along the length of the runway should meet FAA design standard for the existing and future Runway 22. This Runway 22 supplemental wind cone is outside the RSA. The FAA allows the supplemental wind cone to be within the ROFA if there are no other feasible alternatives and they are on a frangible mount. The wind cones at VRB are outside the RSA but typically within the ROFA due to surrounding development that would limit a pilot's view. Whenever a wind cone is being replaced or relocated, the feasibility of moving it outside the ROFA should be assessed.

Locating the Runway 22 supplemental wind cone outside the ROFA was considered, but this would require it to be located east of Taxiway A. In this location, aircraft on Taxiway A, Runway 12L/30R, or the run-up pad near the end of Runway 12L could block the view of the wind cone for a landing pilot. The wooded area on the west side of Runway 4/22, which could block wind, precludes a supplemental wind cone location on the west side of the runway.

<u>Runway 4/22 Supplemental Wind Cone Recommendation</u>

Because the Runway 22 supplemental wind cone is not operational, there is not a no-build option. The supplemental wind cone should be located to serve the existing length and any future extension of Runway 22. The recommended location is between Runway 4/22 and Taxiway A. This recommended supplemental wind cone was considered and shown on the alternative concepts for Runways 4/22 and 12L/30R in figures 5.6 to 5.8.

The FAA requested consideration of the relocation of the Runway 4 supplemental wind cone. It is outside the RSA but within the ROFA. Because of the location of the parallel taxiway and surrounding development, to provide a clear line of sight to the wind cone for approaching pilots, the best location is the existing location between Runway 4/22 and Taxiway B, outside the RSA but within the ROFA.

Compass Calibration Pad

A compass calibration pad is at VRB. With Piper Aircraft using VRB to test new aircraft, the compass calibration pad is an important asset. The compass calibration pad is west of Taxiway D along the south edge of Taxiway E, within the Runway 12R/30L ROFA. It should be relocated outside the ROFA to keep aircraft outside the ROFA when using the pad. FAA AC 150/5300-13B provides guidance on the preferred locations of a compass calibration pad. The center of the pad should be located[30]:

- A minimum of 600 feet from magnetic objects, e.g., parking lots, busy roads, railroad tracks, high-voltage electrical transmission lines, or cables carrying direct current
- A minimum of 300 feet from buildings, fuel lines, and electrical or communication cable conduits, if they contain magnetic materials
- A minimum of 150 feet from runway and taxiway light bases, airfield signs, ducts, and grates for drainage, if they contain iron, steel, or ferrous materials
- Clear of any critical area for electronic navaid facilities
- Not penetrate the OFZ, safety areas, OFAs, etc.

A potential site meeting these criteria was identified, as depicted on **Figure 5.20.** This potential site is east of Taxiway A, near the existing run-up pad south of Runway 12L. This location complies with the preferred location guidance in FAA AC 150/5300-13B. The potential relocation site is a minimum of 600 feet from the electrical vault and the potential relocated ASOS site. This area is also limited to future aeronautical development due to height restriction limitations. While there are no known electrical cables in this area, a magnetic survey should be conducted to verify that the potential location is suitable for the pad or modify it to allow it to be suitable. The compass calibration pad is used primarily by ADG-II aircraft, so its location along Taxiway A that serves ADG-II aircraft would be acceptable.

<u>Compass Calibration Pad Recommendation</u>

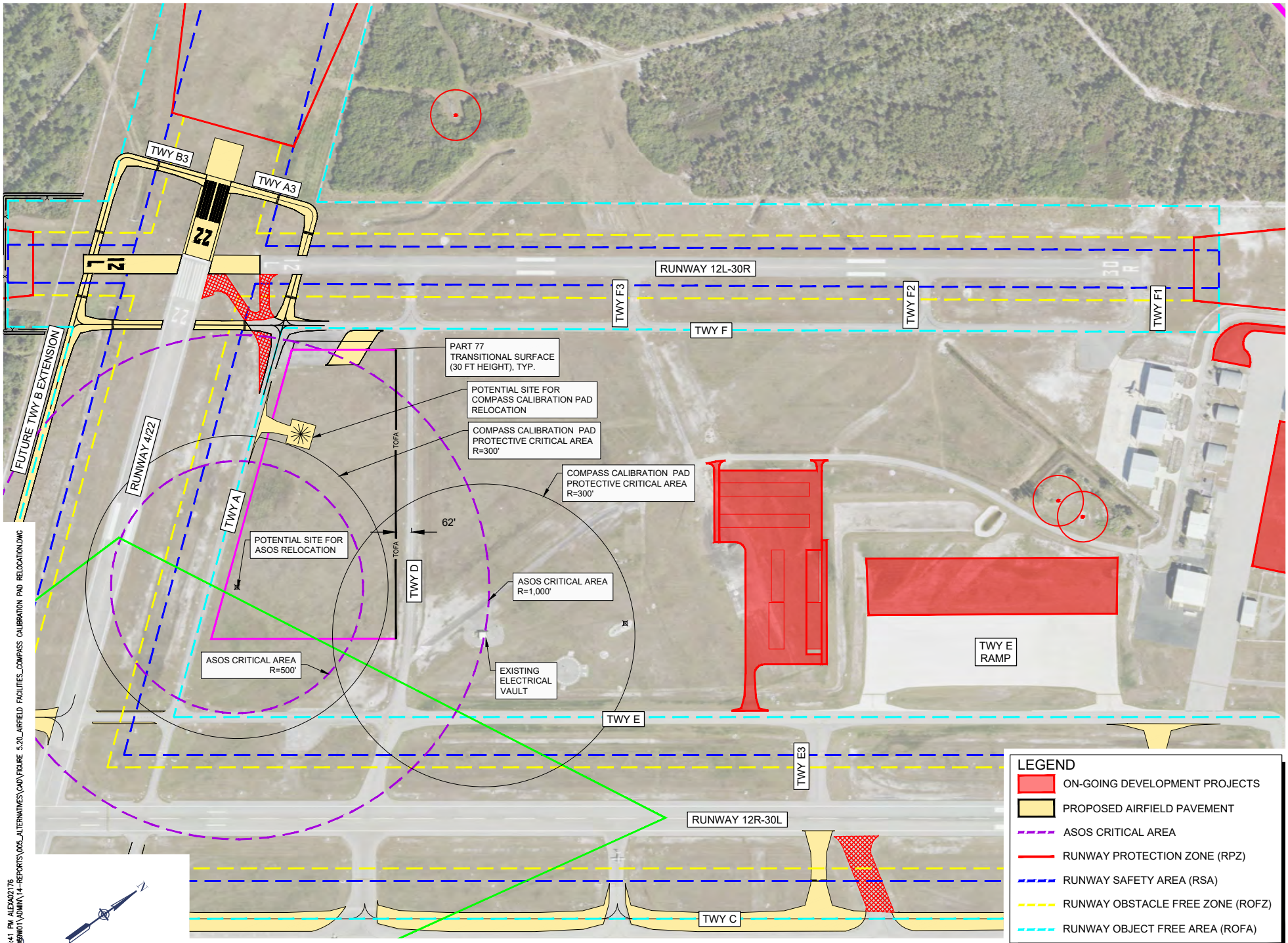
With the use of the compass pad by new aircraft and others needing a compass calibration pad, it is recommended to provide a compass calibration pad at VRB. The no-build condition of maintaining the compass calibration pad in its existing condition is not acceptable, as its location within the Runway 12L/30R ROFA for ARC C-III aircraft does not meet FAA design standards. Only one feasible location was identified with existing taxiway access. This location is along Taxiway A, as depicted on Figure 5.20.

5.4. Other Airfield Support Infrastructure

Electrical Vault

The electrical vault is considered to be in good condition and has adequate space. Standard useful life upgrades should be considered, particularly when upgrading lighting to LED.

[30] FAA AC 150/5300-13B, dated March 31, 2022.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 3:41 PM ALEXA02176
I:\20JOBS\20A0089W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.20_AIRFIELD FACILITIES_COMPASS CALIBRATION PAD RELOCATION.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	SITE FOR COMPASS CALIBRATION PAD RELOCATION
DRAWN BY: JA	CHECKED BY: SZ	FIGURE 5.20	

5.5. Emerging Technology

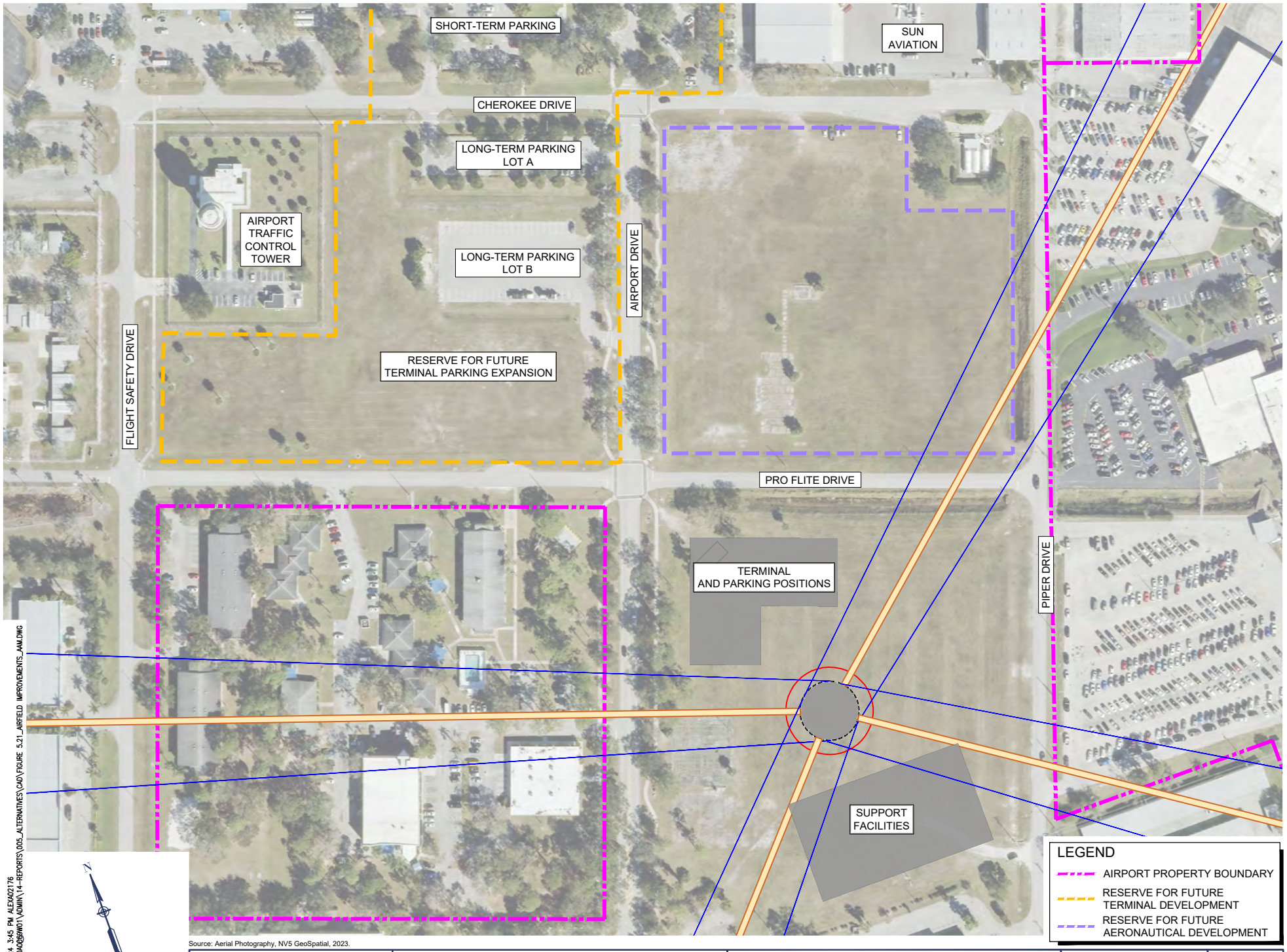
Multiple companies are working to develop electric vertical takeoff and landing aircraft (eVTOL). Companies are also working to prepare infrastructure to support these AAM aircraft. In September 2022, the FAA released *Engineering Brief 105: Vertiport Design* to set forth interim guidance for airport sponsors and vertiport developers. The FAA has indicated it anticipates releasing a vertiport design advisory circular in the next 24 months and is working to develop a review and approval process for proposed vertiports. An important step for an airport to prepare to serve eVTOL or other new-energy-source vehicles is to include the proposed infrastructure in its ALP.

VRB has a letter of intent with a vertiport developer. The location of the proposed vertiport, subject to FAA and city approvals, is southeast of the terminal between Airport, Pro Flite, and Piper drives. The conceptual layout of the vertiport and approach surfaces is depicted on **Figure 5.21**. This location allows for pedestrian access via existing sidewalks to the passenger terminal. It is also within proximity to electrical service to support the anticipated operations and charging needs of eVTOL aircraft.

All the aircraft fueling at VRB is provided by the FBOs. In addition to the proposed privately developed vertiport, electric vehicle chargers for aircraft may also be developed by the FBOs. The commercial service facilities should consider including provisions to be able to support electric ground service equipment. As part of the parking lot expansion, VRB may also wish to consider installing electric automobile charging stations. The ground vehicle-related facilities will be considered further in the related sections that follow.

5.6. Airfield Perimeter Road

To provide access to all areas of the airfield without using surrounding public roads, an extension of the perimeter road system on the north side of the airport is needed. A perimeter road is also to be used to facilitate monitoring the perimeter security fence. Taking into account the recommended airfield improvements, a location for extending a perimeter fence to the northern portion of the airfield is depicted with the preferred airfield development on **Figure 5.22**.



Source: Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 3:45 PM ALEXA02176
I:\20L08S\20A008W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.21_AIRFIELD IMPROVEMENTS_AAM.DWG

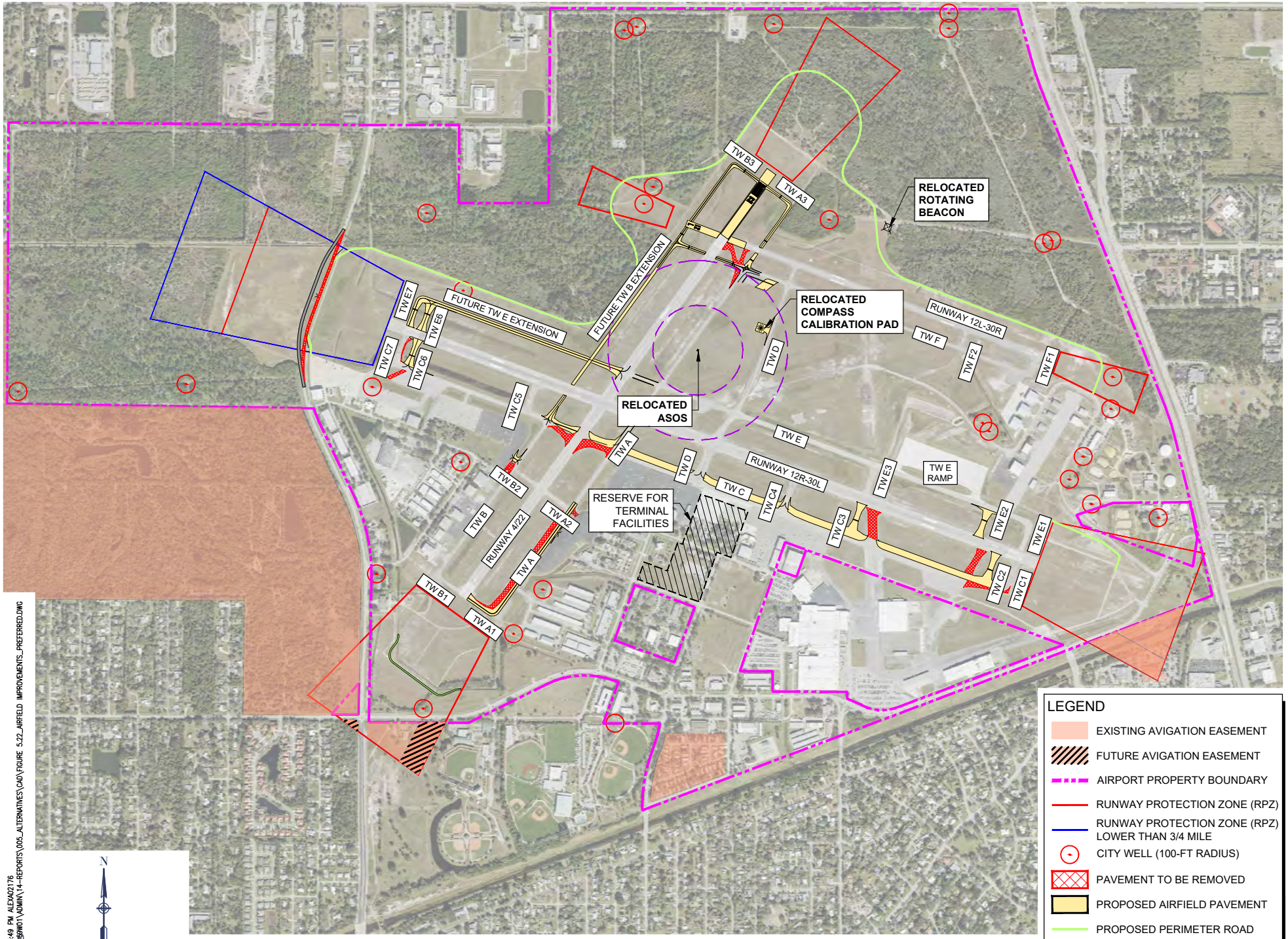
VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	CONCEPTUAL VERTIPORT LAYOUT

DRAWN BY:	JA	FIGURE 5.21
CHECKED BY:	SZ	

5.7. Preferred Airfield Improvements

Figure 5.22 depicts an overview of the preferred airfield improvements and airfield support facilities at VRB. These recommended airfield improvements include:

- Relocate 43rd Avenue and the perimeter road and fence to eliminate the use of declared distances on Runway 12R/30L.
- Pursue approach minimums of 1/2 a mile on Runway 12R with the installation of the MALSR and obstruction mitigation.
- Extend the Runway 22 end up to 726 feet.
- Relocate the drainage swale and fence and RSA improvements to eliminate the need for declared distances on Runway 4/22.
- Extend Taxiway B the full length of Runway 4/22 with a 400-foot runway centerline to taxiway centerline separation and pavement at least 35 feet wide.
- Widen Taxiway E from 40 feet to 50 feet between Taxiway D and Runway 4/22.
- Extend Taxiway E the full length of Runway 12R/30L with a 400-foot runway centerline to taxiway centerline separation and pavement 50 feet wide.
- Realign Taxiway C for a 400-foot runway centerline to taxiway centerline separation the entire length.
- Modify Taxiway A1 to eliminate the direct apron-to-runway connection.
- Modify Taxiway C2 to eliminate the direct apron-to-runway connection and provide a standard 90-degree connector.
- Add a bypass taxiway from Taxiway C at the Runway 12R end.
- Rename taxiway end connectors and others as needed to support this change.
- Relocate the airfield rotating beacon, ASOS, and compass calibration pad.
- Work with the flight schools to minimize aircraft parking in RVZ.
- Extend perimeter road on north side of airfield.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

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I:\20L08S\20A008SW01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.22_AIRFIELD IMPROVEMENTS_PREFERRED.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

PREFERRED AIRFIELD IMPROVEMENTS

DRAWN BY:	JA	FIGURE 5.22
CHECKED BY:	SZ	

5.8. Airside Development

The facility requirements chapter identified the need for additional airside facilities to support commercial service and general aviation operations. Using the recommended airfield development as the future airfield for planning purposes, areas for potential airside development are identified.

Ongoing Development Projects

At the time of this airport master plan, VRB has several areas committed to development projects that are in various stages of planning, design, and construction. For the purpose of identifying areas for potential development, these areas are considered not available. However, the ongoing development, including hangars, will be considered when identifying the additional square footage needed to support the facility requirements.

Environmental Considerations

The 2015 City of Vero Beach Comprehensive Plan identified areas on the north and northwest side of the airport as conservation. Through this master plan, those areas are being reviewed for any potential recommended updates to the comprehensive plan. Therefore, they are being considered for potential development, subject to environmental considerations.

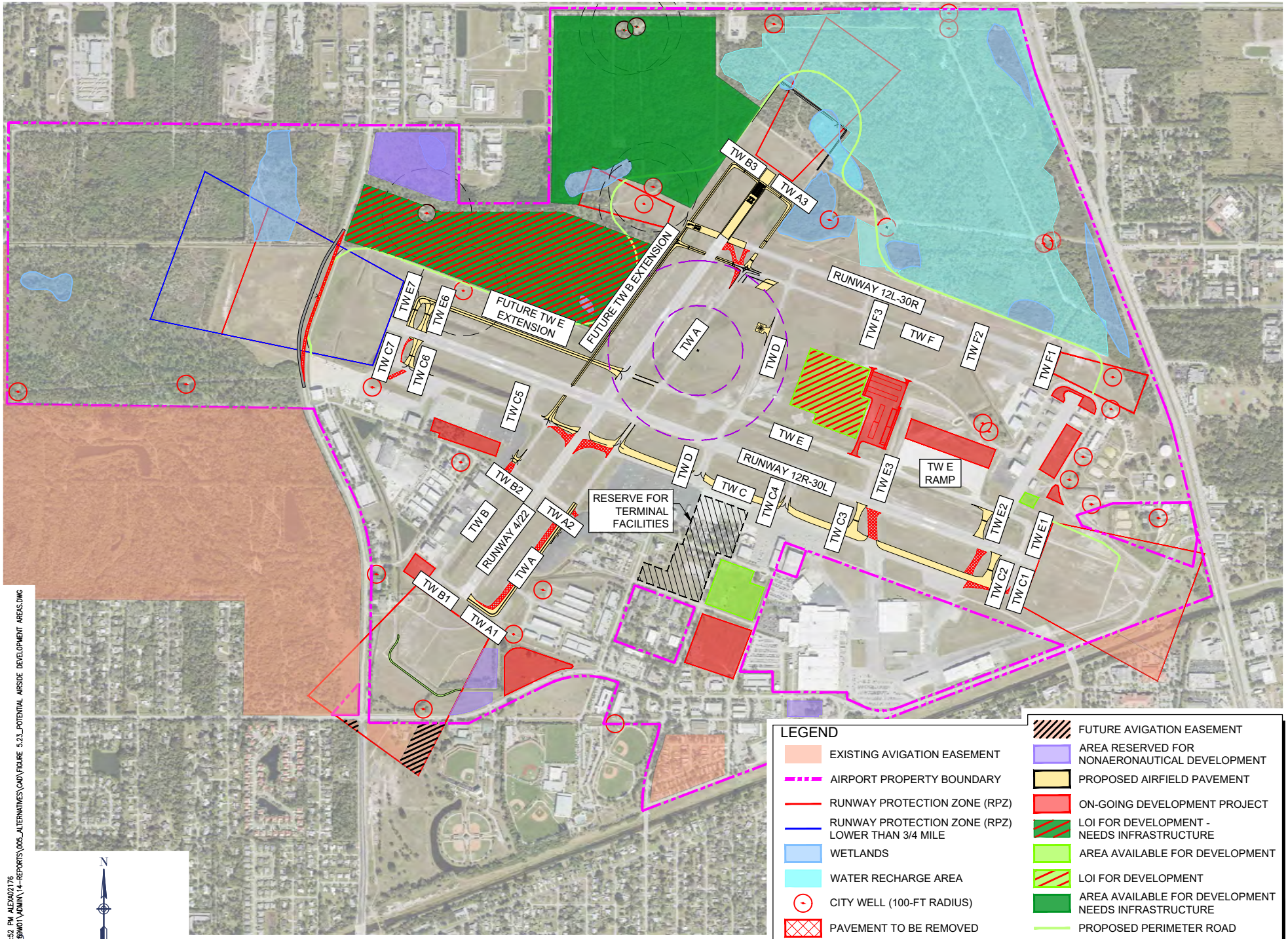
As identified in the environmental overview chapter, there are wetlands and city wells that require a protective area in the undeveloped areas that should be avoided. There is a 100-foot-radius lease around each of the water wells on VRB. The state has established wellhead protection areas that extend a 500-foot radius from the water well to protect the ground water supplies from contamination.

The northeast portion of the airport is part of the water (aquifer) recharge area. The environmental overview identified that VRB is within the range of threatened and endangered species, including the gopher tortoise, scrub jay, and snail kite. The 2016 VRB Habitat Conservation Plan identified 174 acres of suitable Florida scrub jay habitat. At the time of the conservation plan, it was anticipated that any development on VRB would be within the existing airport operations area or already improved lots. Prior to development in undeveloped areas, additional environmental analysis, including potential field studies for species, will be required.

Any development at VRB must have adequate stormwater management. There is a stormwater master plan ongoing concurrent with this airport master plan. Data is being shared between the two master plans. After the recommended development plan is identified for the airport master plan, it will be coordinated with the stormwater master plan to identify areas for the stormwater detention that will be needed to support the planned infrastructure.

Figure 5.23 shows the preferred airfield development, ongoing development projects, and mapped environmentally sensitive areas to identify areas to accommodate potential airside development. VRB has been focused on developing already improved areas first, so there is limited improved, uncommitted area remaining. However, there are undeveloped areas that may be suitable for development. Because there are undeveloped areas, redeveloping areas with existing infrastructure was not considered for this analysis.

With the water recharge area northeast of the runways, this area should remain undeveloped, at least until all other developable areas on the airport have been used. Therefore, accommodating airside development, beyond what can be met in the already improved areas, will focus on the northwest area.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 3:52 PM ALEXA02176
I:\20J08S\20A008WO1\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.23_POTENTIAL AIRSIDE DEVELOPMENT AREAS.DWG

VERO BEACH REGIONAL AIRPORT | HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	POTENTIAL AIRSIDE DEVELOPMENT AREAS	DRAWN BY: JA CHECKED BY: SZ FIGURE 5.23

5.9. Commercial Service Facilities

The commercial service facilities at VRB are centered around the terminal building. Therefore, the area that will be reserved for future commercial service facilities is considered before the general aviation facilities, which have more flexibility in their location on VRB.

The passenger terminal areas needed to provide a higher level of service and support overlapping flights were included in the facility requirements chapter. In addition, the terminal building improvements being designed for construction in 2024 were summarized. While the 2024 improvements will increase the current passenger terminal facilities by 50%, once they are complete there are very few, if any, options to further improve or expand the terminal building.

The facility requirements chapter also addressed the short- and long-term automobile parking areas of the passenger terminal. It documented a prior study that showed additional automobile parking spaces were needed. The demand for more spaces was based on a maximum of 10 commercial service flights per week, which started occurring in September 2023. Published schedules show this frequency increasing to 14 flights per week in October 2023 and 17 flights per week in November 2023.

Considering the developed areas of VRB before opening the undeveloped areas, the reasonable alternative to provide additional terminal building and automobile parking improvements would be adjacent to the existing facilities. **Figure 5.24** depicts the existing terminal facilities and outlines the areas that need to be reserved to provide future commercial service facilities.

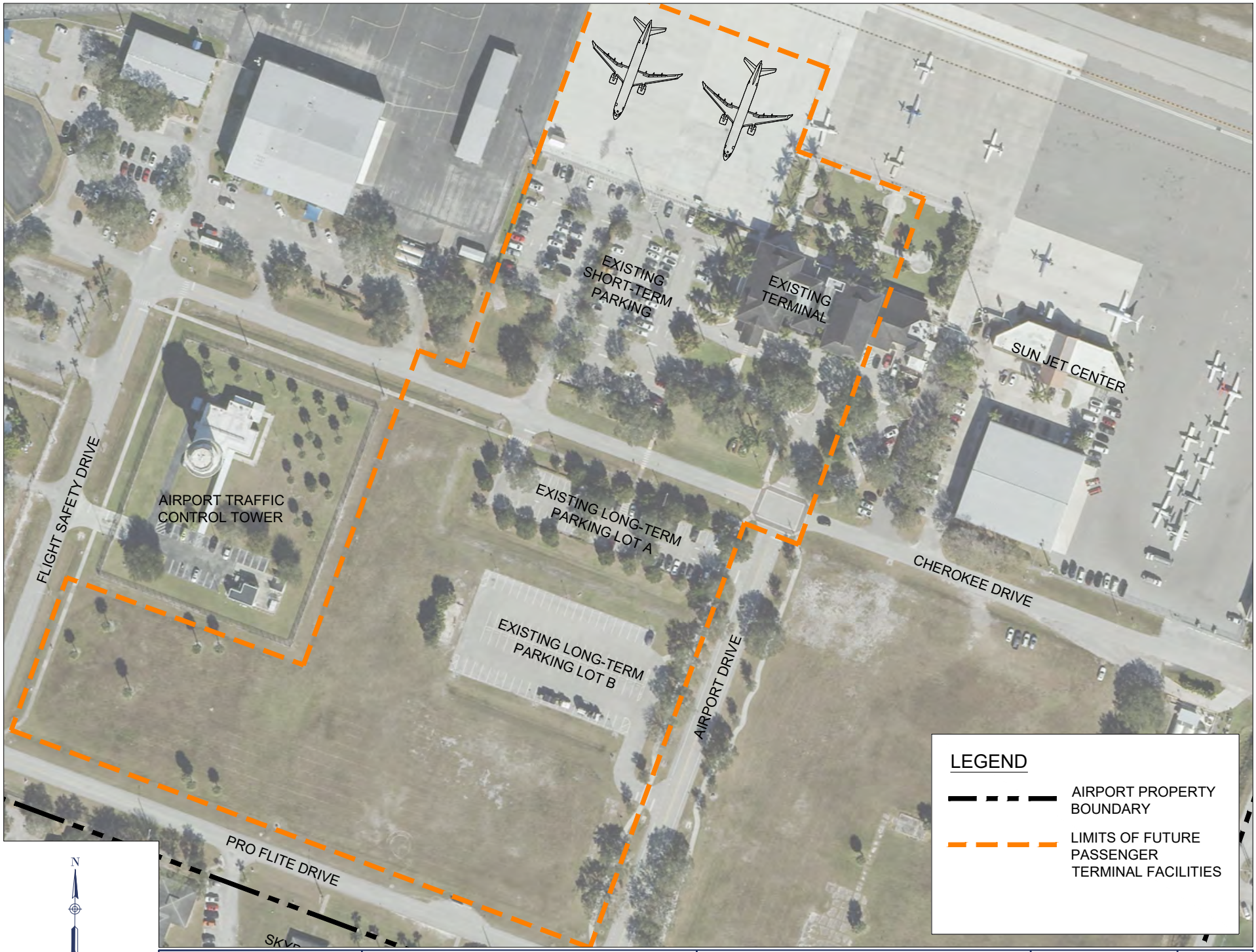
Concept for Future Terminal Building Space

The facility requirements established that 12,430 square feet of terminal space are required to support overlapping flights. **Figure 5.25** illustrates a general concept for a 12,430-square-foot terminal building northwest of the existing terminal. The building footprint shown would be for a single-story structure, because it is not envisioned that a new terminal would require a second level. Furthermore, any new facility should be as simple as possible to provide flexibility for other uses, should the demand for passenger service at VRB change in the future.

A new 12,430-square-foot facility also enables the existing terminal building to remain operational during construction. Once complete, the existing terminal building might continue to support passenger service, or the space could be reconfigured for another use. This will depend on whether passenger service is expected to exceed the capabilities of the new 12,430-square-foot facility. Such growth would justify an updated projection of commercial service activity and a more detailed terminal area planning program.

Expansion of Passenger Terminal Automobile Parking

Figure 5.25 also demonstrates the potential to expand the automobile parking lots south of Cherokee Drive. The prior parking study identified a need for an additional 150 to 200 spaces. Given the current airline schedules, the immediate need is closer to the 200-space estimate. Additional spaces will be required in the future, especially given that some short-term spaces will be lost if a new terminal building is constructed. It is also worth noting that as the passenger airline options and frequencies increase, the average length of stay for those using the long-term parking may also change. For these reasons, Figure 5.25 illustrates how the surface lots could be expanded to accommodate demand beyond that projected, even for a high-growth passenger scenario. Finally, it should be



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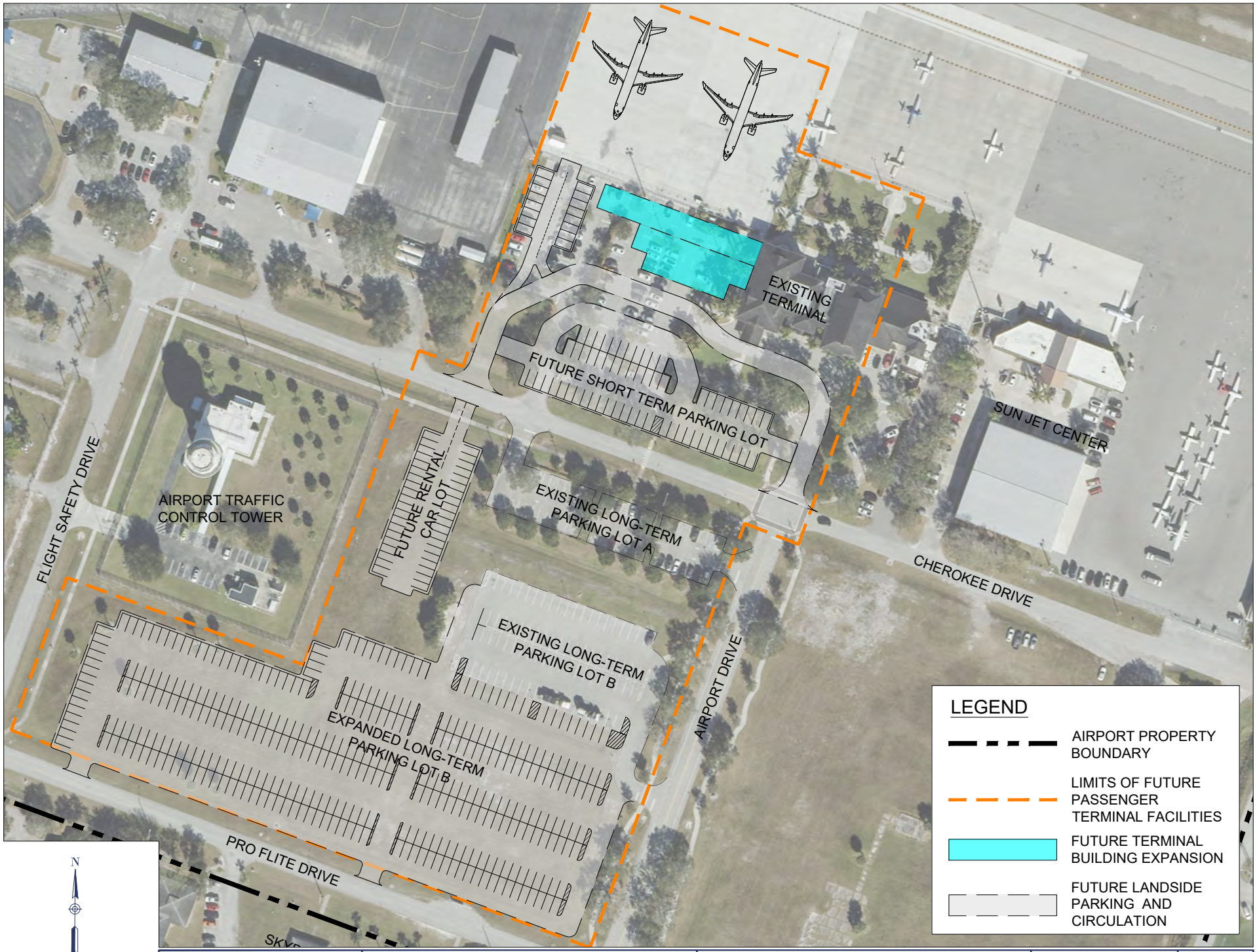
C:\USERS\JHALISKY\DOCUMENTS\AVIATION PLANNING\AIRPORTS\VRB\05 GRAPHICS-GIS-MODELING\DRAWINGS\VRB MP - FIGURE 4-A.DWG

ESA	VERO BEACH REGIONAL AIRPORT MASTER PLAN	EXISTING PASSENGER TERMINAL FACILITIES	DRAWN BY: JJH CHECKED BY: DJD	FIGURE 5.24



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C:\USERS\JHALISKY\DOCUMENTS\AVIATION PLANNING\AIRPORTS\VRB\05 GRAPHICS-GIS-MODELING\DRAWINGS\VRB MP - FIGURE 4.B.DWG

ESA	VERO BEACH REGIONAL AIRPORT MASTER PLAN	CONCEPT OF FUTURE PASSENGER TERMINAL FACILITIES	DRAWN BY: JJH CHECKED BY: DJD	FIGURE 5.25

noted that airport management has the option of closing a portion of Cherokee Drive to the west of Airport Drive to enhance the margin of safety for pedestrian traffic.

Based on the commercial service enplanement forecast, as included in the aviation forecast chapter, the area around the existing terminal should be sufficient to accommodate the project demand.

Commercial Service Facilities Recommendation

The existing areas around the terminal should be sufficient to accommodate the passenger enplanements, as projected in the aviation forecasts. Therefore, the area west and south of the existing terminal should be reserved for commercial passenger terminal and auto parking expansion. A detailed layout of these facilities should be developed in a future terminal area plan. To maximize the use of the available space, more detailed planning should occur as part of the planning and design of these facilities. The detailed planning would include provisions for ground service equipment, network transportation companies, and taxi and other ground transportation, as well as Americans with Disabilities Act and other access accommodations. Any terminal facilities should be planned to meet the customer service expectations set for VRB.

5.10. General Aviation Facilities

This section analyzes potential areas to support the demand for the future development of GA facilities. The analysis to determine the future development uses the baseline and projected 20-year forecast of based aircraft at VRB, compared to the facilities available that were identified in the facility requirements chapter. VRB is a complex airport with a dynamic GA presence, with operations by business jets and smaller GA aircraft, in addition to two active flight schools. Flight schools generally use single-engine aircraft that are tied down on their ramp when not in use. Therefore, the single-engine aircraft associated with both flight schools were omitted from the hangar demand calculations. VRB also provides commercial service operations; however, these aircraft do not require hangars at VRB are not included in the calculations for future GA facility development. The following sections provide additional information on the future GA facilities' development.

Aircraft Hangar Development

There are various types and sizes of hangars at VRB to accommodate the demand by based aircraft. As identified in the forecast chapter, the existing hangar occupancy on the airport is 100%. There are few, if any, nonflight, school-based aircraft that are tied down, with owners desiring protection for their aircraft. Any tied-down based aircraft are typically short-term waiting for hangar space. It is assumed that all future based aircraft, except for the single-engine aircraft used for flight training, would require a hangar. The Piper aircraft being manufactured are also excluded from the hangar calculations, because they are located on Piper Aircraft property. Based on the forecast demand, the future GA development alternatives identified in this section assume that the increase in nonflight, school-based aircraft over the 20-year planning period would be stored in hangars.

T-Hangar Development

VRB has two sizes of T-hangars: small (1,034 square feet) and medium (1,296 square feet). Generally, T-hangars are used to store single-engine, piston-powered aircraft. For planning purposes, it has been assumed that T-hangars would be desired to store future single-engine aircraft at VRB. The facility requirements identified the need for 70 additional T-hangars to meet the demand over the 20-year planning period. At the time of this airport master plan, ongoing hangar development projects in the midfield area and adjacent to the north ramp will provide an additional 32 T-hangars and 10 box hangars, respectively. With 32 T-hangars being developed, space for an

additional 38 T-hangars needs to be identified. The 32 planned T-hangars would meet the project demand through the intermediate PAL for single-engine aircraft.

Small Box Hangar Development

Generally, small box hangars at airports accommodate small, multiengine, piston-powered aircraft. For the purposes of this airport master plan, because multiple GA aircraft can be stored together in a large hangar, the additional space is identified in the square footage needed. The facility requirements identified the need for approximately 45,000 square feet for multiengine aircraft and 18,000 square feet for rotorcraft, for a total of 63,000 square feet. At the time of this airport master plan, several ongoing hangar development projects in the midfield area and adjacent to the north ramp provide 20,460 square feet, 18,432 square feet, and 15,900 square feet, respectively. These developments provide approximately 54,792 square feet of small hangar space, which almost meets the additional square footage needed through the long-term PAL for multiengine and rotorcraft. Approximately 8,200 square feet of additional small box hangar space is needed to meet the long-term PAL.

Large Box Hangar Development

Generally, large box hangars at airports accommodate business jets. For the purposes of this airport master plan, because multiple GA aircraft can be stored together in a large hangar, the additional space is identified in the square footage needed. The facility requirements identified the need for approximately 184,600 additional square feet of large hangar space. At the time of this airport master plan, an ongoing hangar development project adjacent to the Taxiway E ramp will provide six large box hangars, for a total 86,500 square feet. These planned large box hangars would meet the project demand through the short-term and into the intermediate-term PAL. Therefore, an additional 98,100 square feet should be reserved for large-box hangar development to fully accommodate the intermediate- and long-term PAL.

5.11. Development Areas Available for GA Facilities

Figure 5.23 identified the area potentially available for airside facilities. As described above, the area west and south of the existing terminal should be reserved for commercial service facilities. If the ASOS is relocated, some additional midfield development can occur. If a portion of Cherokee Drive is closed, a connection to the airfield could be established between Sun Aviation and the parcel to the south that contains its fuel farm.

Figure 5.26 shows the potential midfield development area with the relocation of the ASOS with a hangar development concept. This area is approximately 560,000 square feet. Due to height restrictions from the ATCT LOS, T-hangar development is best suited farthest north, leaving the area closer to Taxiway E for box hangars.

Approximately 5,000 square feet is needed per T-hangar to protect for a T-hangar and associated pavement with ADG-I TLOFA. Therefore, to meet the demand for 38 additional T-hangars, approximately 190,000 square feet is needed. The remaining area could accommodate up to two large box hangars or some small box hangars. Recent hangar development at VRB has been done with private investment. Therefore, the exact layout of this area would be determined by the developer. The conceptual layouts are shown to identify a sufficient area to meet the projected needs.

RELOCATED ROTATING BEACON

RUNWAY 12L-30R

TW F

TAXIWAY B EXTENSION

RUNWAY 4/22

RELOCATED COMPASS CALIBRATION PAD

TW A

TW D

RELOCATED ASOS

RELOCATED SEGMENTED CIRCLE AND LIGHTED WIND CONE

15-FT AGL

20-FT AGL

25-FT AGL

30-FT AGL

TW E RAMP

TW E

RUNWAY 12R-30L

TW C

35' BRL

TOFA

NOTE

CONTOURS DEPICTED IN THE MIDFIELD ARE BASED ON HEIGHT RESTRICTIONS FROM THE ATCT LINE-OF -SIGHT.

LEGEND

- WETLANDS
- AIRPORT PROPERTY BOUNDARY
- RUNWAY PROTECTION ZONE (RPZ)
- PAVEMENT TO BE REMOVED
- PROPOSED AIRFIELD PAVEMENT
- ON-GOING DEVELOPMENT PROJECT
- AREA AVAILABLE FOR DEVELOPMENT
- LOI FOR DEVELOPMENT
- CITY WELL (100-FT RADIUS)

N

0 500

GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

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I:\20L08S\20A008WO1\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.26_AIRFIELD IMPROVEMENTS_MIDFIELD DEVELOPMENT.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

MIDFIELD DEVELOPMENT AREAS WITH ASOS RELOCATION

DRAWN BY: JA

CHECKED BY: SZ

FIGURE 5.26

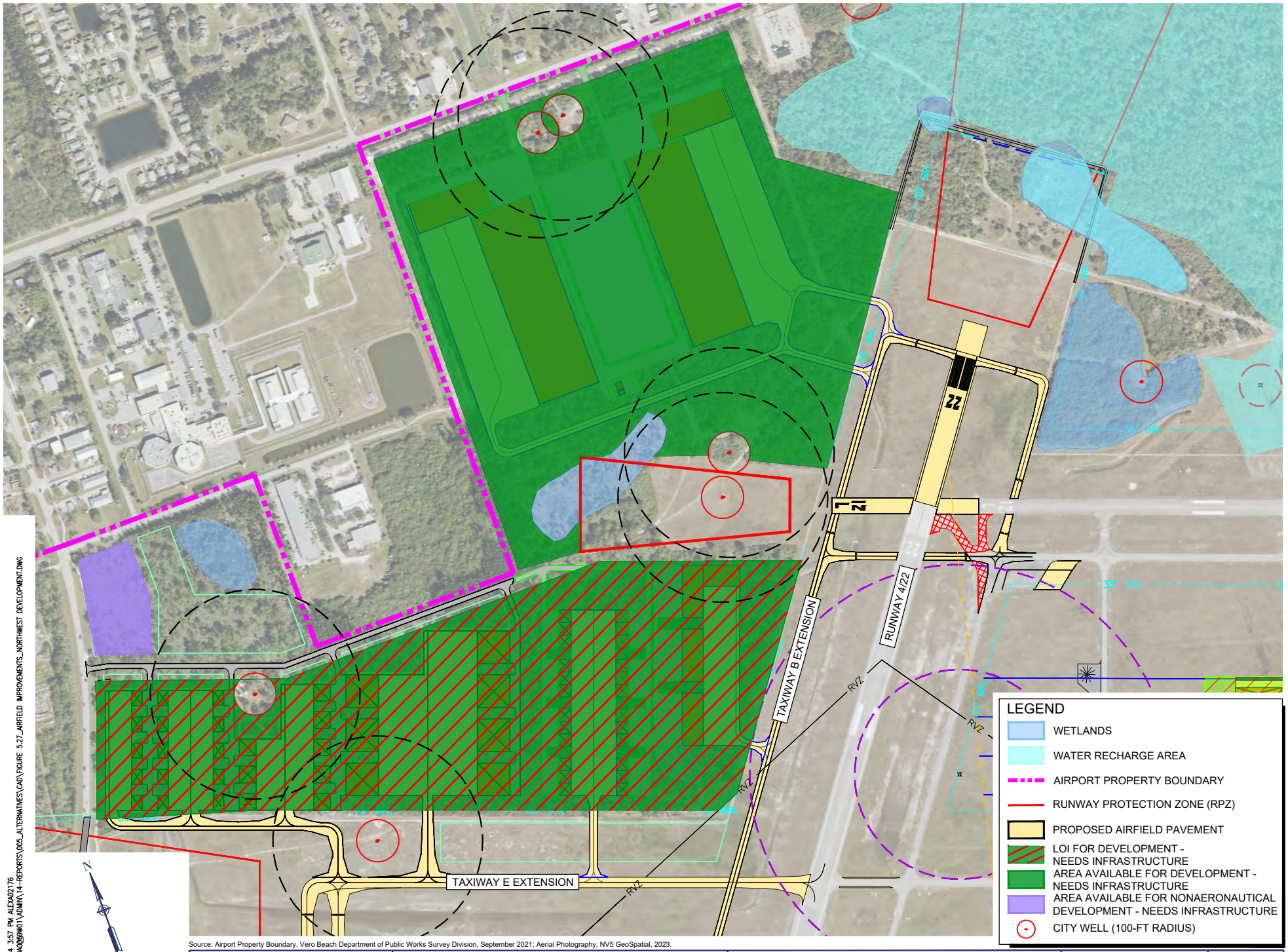
Thus, to meet the future facility requirements, development areas beyond the improved areas are required. The two largest undeveloped areas on VRB with potential airfield access are northwest of the runways and northeast of the runways. As identified previously, there are several environmental considerations in the northeast area. Therefore, the northwest area has been assessed.

The area northwest of the runways has the potential for direct access to the primary or crosswind runway. Any development in this area would need to maintain the appropriate setback from the water wells and comply with the requirements of Florida Administrative Code Section 62-521.400, which regulates the location of hazardous material storage around the wells. The wetlands in this area should be avoided and, if not, mitigation will be required. Further environmental study, including an assessment of endangered species, would be needed before pursuing development in this area, which would also require tree removal.

To meet the demand of the 98,100 square feet needed for large box hangars, options to open the northwest area for development, as needed, should be considered. Opening the northwest area for development will require at least a portion of the Taxiway E extension to be constructed. Utilities will also need to be extended to the area. The appropriate stormwater management will need to accompany any new impervious areas. **Figure 5.27** shows a potential development option for the northwest quadrant. While only a portion of this area northwest of the runway is needed to support airside development during the planning period, it is recommended that the entire area that could have airside access be reserved for aviation-related development, even if beyond the planning period. As with the small box hangars, because the recent hangar facilities at VRB have been privately developed, the northwest layouts are conceptual as a guide.

GA Facility Recommendation

If the ASOS is relocated, the midfield area could accommodate the short-term GA development needed. To accommodate the GA facility need for the full planning period, the northwest portion of VRB should be opened for development. The development will need to be planned around the water wells and, if possible, the wetlands. With the environmental considerations in the northeast portion of the airfield, the entire northwest portion should be reserved for aviation development. VRB should work with the city to update the city's comprehensive plan classification of the northwest portion of the airport to allow for development.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 3:57 PM ALEXA02176
I:\20J08S\20A06BW01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.27_AIRFIELD IMPROVEMENTS_NORTHWEST DEVELOPMENT.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN	POTENTIAL NORTHWEST DEVELOPMENT OPTION	DRAWN BY: JA CHECKED BY: SZ	FIGURE 5.27

5.12. Other Airport Support Facilities

Aircraft Rescue and Firefighting

Should operational demand require the need to increase to ARFF Index C, potential site locations on the airfield should be evaluated. These potential site locations should comply to design standards found in FAA AC 150/5300-13B and FAR Part 77 imaginary surfaces. The proposed sites should also allow for emergency response times to comply with the FAA requirements for ARFF vehicles to reach the furthest commercial service runway in under three minutes. Two options were evaluated that could meet these requirements.

Site for Future ARFF Station – Option 1

Option 1 is located near the midfield the north side of Taxiway E and east of Taxiway D as depicted on **Figure 5.28**. This option allows the ARFF station to remain outside the future ASOS critical area. The station height is assumed to be approximately 25 to 30 feet tall which would provide the necessary clearance to the FAR Part 77 transitional surfaces from Runway 12R/30L. The centralized location on the airfield provides efficient airfield access. Utilities are readily available in this area. Landside access would be from the existing midfield service road; however an extension of the road would be required to the proposed site.

Site for Future ARFF Station – Option 2

Option 2 is in the northwest quadrant of the airport as depicted on **Figure 5.29**. This option remains clear of the FAR Part 77 transitional surface and the FAA AC 150/5300-13B design standards. Landside access would be via 43rd Ave. The future landside access road from 43rd Ave should be constructed to protect for future aeronautical development in this area. Whereas Option 1 has available utilities and airfield and landside access, additional development is required prior to the development if Option 2. The extension of existing utilities would be required to the area, as well as the extension of Taxiway B north of Runway 12R/30L.

<u>ARFF Station Recommendation</u>

With the available utilities and existing access, the Option 1 site is recommended as it provides the most flexibility on the timing of development with less site development costs.

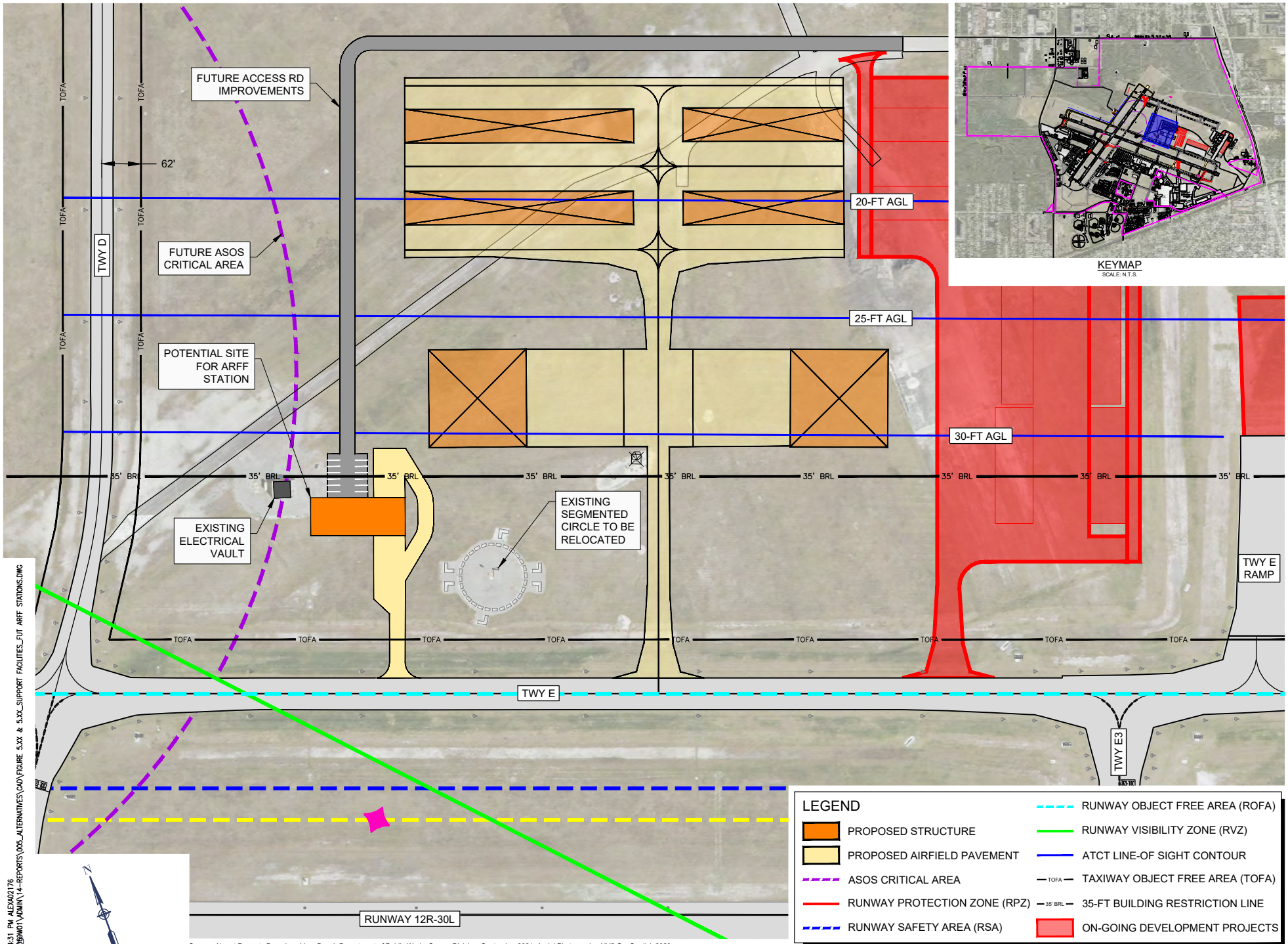
Airport Operations Facility

The airport operations facility is in the southwest quadrant of the airport, east of the Runway 4 end. During the inventory site visit, the need for additional storage space for operations equipment was identified, and any additional space was preferred to be located near the existing facility. There is limited space in the existing airport operations area due to a stormwater detention area south of the operations facility and north of the T-hangars. Therefore, other areas of the airport were considered. A potential supplemental operations facility along the north ramp was considered. However, parcels in this area have the potential for airside access and there are potential sites for aeronautical development.

While access from the maintenance facility to the airfield is needed, it can be via an access road and does not need direct access to a taxiway. Therefore, a site near the Option 1 ARFF location was considered. This would group airfield support facilities and the maintenance facility could be planned such that is ties into the ARFF access to the airfield. This site also put the additional maintenance facility near areas of the airport that are expected to be developed. **Figure 5.30** the proposed additional airport operations facility location.

<u>Airport Operations Recommendation</u>

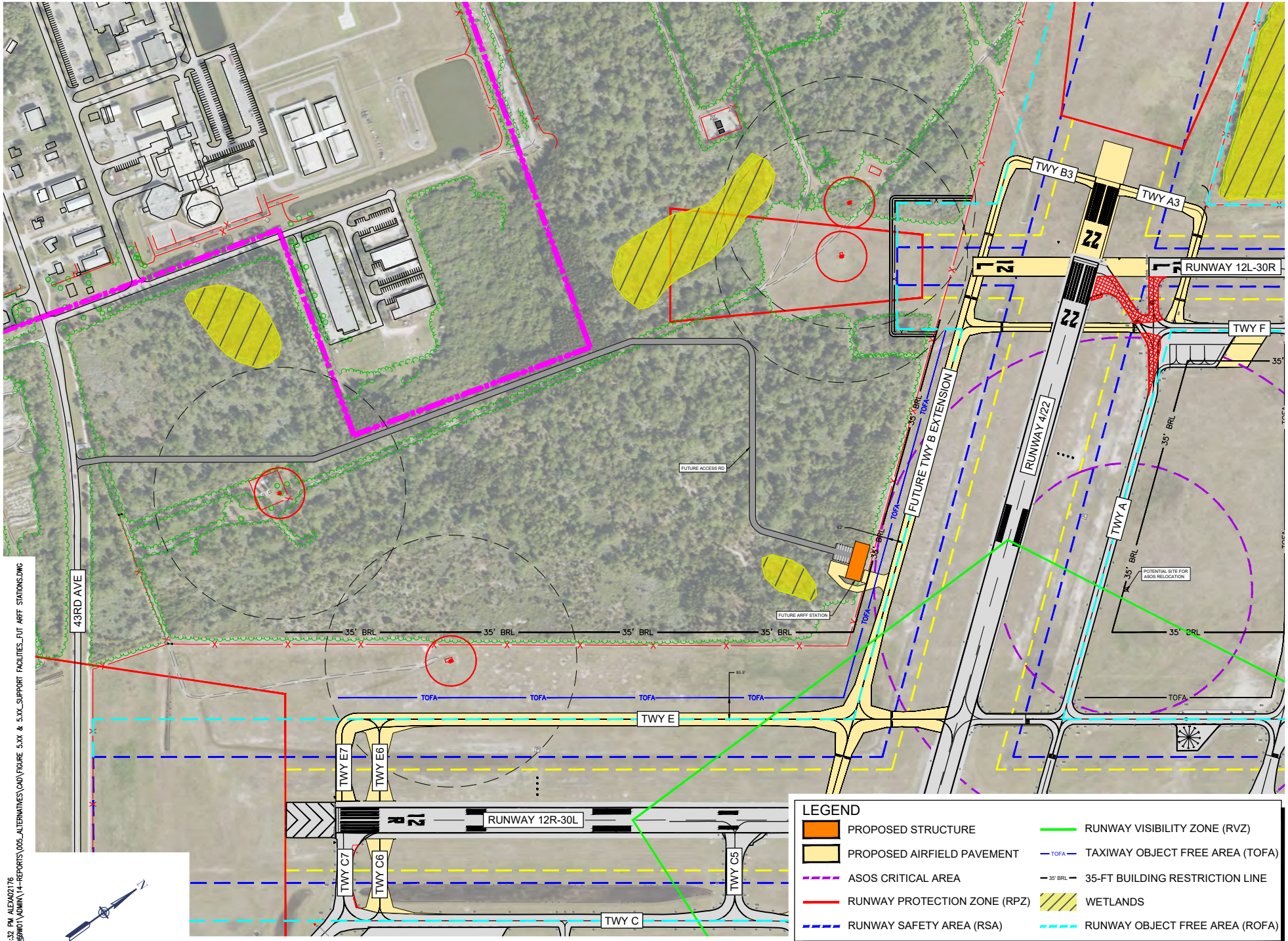
A site near the proposed ARFF station in the midfield area should be reserved for an airport operations facility.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 4:31 PM ALEXA02176
I:\20J08S\20A00869W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.XX & 5.XX_SUPPORT FACILITIES_FUT ARFF STATIONS.DWG

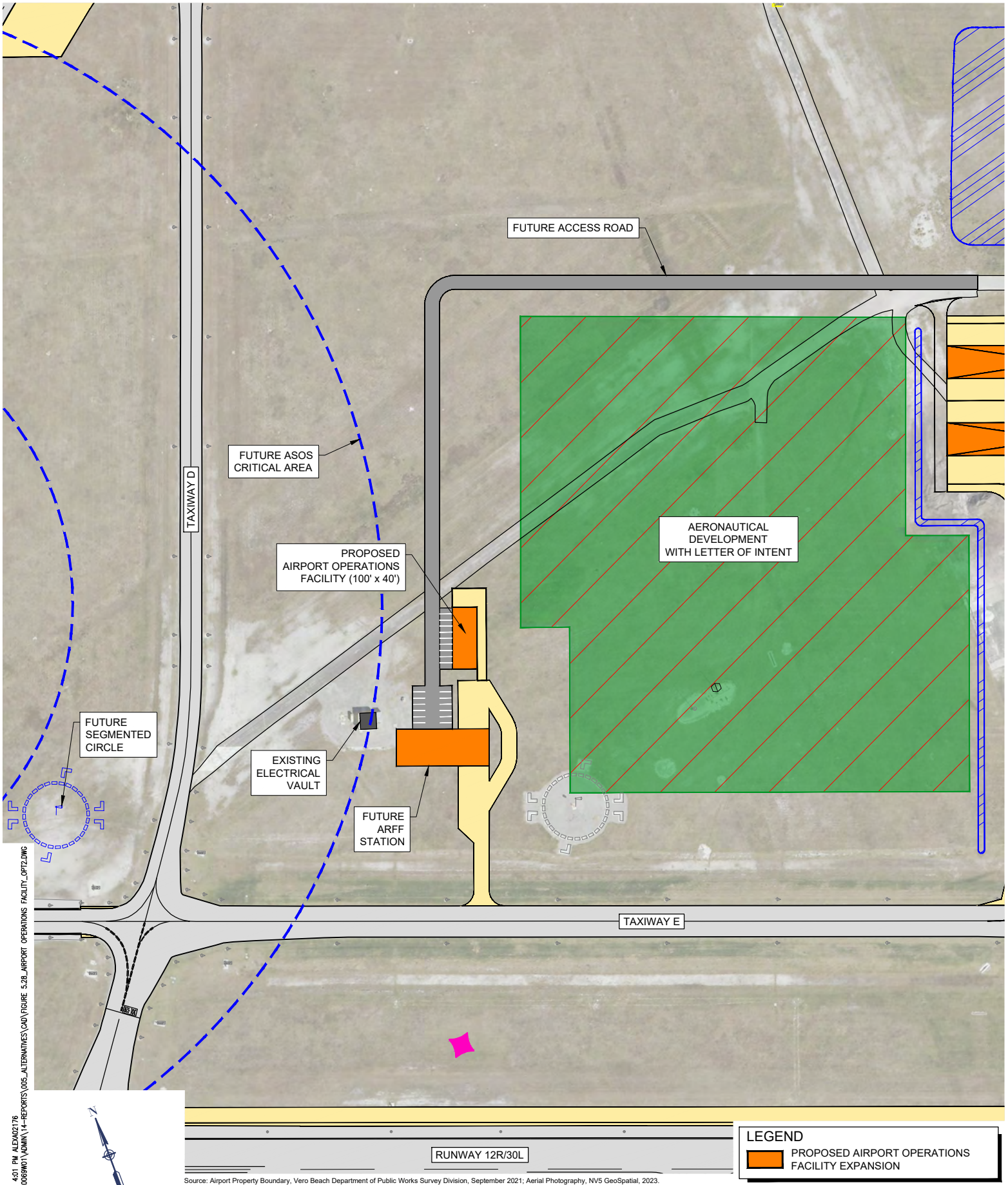
VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	ARFF STATION - OPTION 1	DRAWN BY: JA / CHECKED BY: SZ	FIGURE 5.28



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 4:32 PM ALEXA02176
I:\20L08S\20A06B\W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.XX & 5.XX_SUPPORT FACILITIES_FUT ARFF STATIONS.DWG

VERO BEACH REGIONAL AIRPORT / HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	ARFF STATION - OPTION 2	DRAWN BY: JA CHECKED BY: SZ	FIGURE 5.29



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

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I:\20JOBS\20A0089W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.28_AIRPORT OPERATIONS FACILITY_OPT2.DWG

VERO BEACH | HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	AIRPORT OPERATIONS FACILITY EXPANSION	DRAWN BY: JA CHECKED BY: SZ	FIGURE 5.30

Fuel Farms

At the time of this airport master plan, all fuel farms are in good working condition and meet airport needs. All the fuel farms are operated by private entities. No requests to reserve additional areas for fuel farms were received from tenants during the inventory process. There is a move toward unleaded Avgas. As this occurs, entities providing aircraft fueling may add an unleaded fuel, either as an additional option or as a future replacement for the current Avgas. Unless VRB receives a request for additional space to accommodate unleaded fuel, no changes to the fuel farms are recommended.

Perimeter Fence and Security Gates

The perimeter fence on the north side of the airfield along the tree line was upgraded to 10 feet high. This included 2 feet below ground, 7 feet above ground and 1 foot of three-strand barbed wire on top. It is desired to upgrade the existing perimeter fence on the south side of the airport similar to the improvements completed to the north side to help prevent wildlife access.

In addition to security gates, security cameras should be considered to provide additional security to the airport facilities and T-hangars.

Perimeter Fence and Security Gate Recommendations

To enhance the safety of the airport by improving the access and wildlife control, upgrades to the 10-foot-high perimeter fence on the south side of the airport are recommended. In addition, security camera improvements are recommended. At a minimum, a camera at the security gate off Flight Safety Drive is needed. Additional security cameras to see taxilanes between the T-hangars would also be beneficial to monitoring operations at VRB.

5.13. Landside Facilities

Vehicle Ground Access

At the time of this airport master plan, an ongoing PD&E study evaluated improvements to the intersection of State Road 5/U.S. 1 and Aviation Boulevard. This intersection is within the Runway 30L RPZ. However, to avoid impacts to airport operations, the PD&E study has eliminated all alternatives that included an overpass or underpass. VRB should continue to work with FDOT, such that any improvements would be located farther from the existing runway end than the existing roadways.

The community also plans to improve Airport Boulevard. As depicted on **Figure 5.31**, portions of Aviation Boulevard are in city-owned right of way and portions are owned by the airport. VRB pursued a release of the right of way to the city for improvements to the intersection of Aviation Boulevard and 43rd Avenue. However, because the section was within the Runway 4 RPZ, and some of the improvements were closer to the end of the runway, the FAA denied this land release request. Road improvements, subject to FAA review, could be acceptable, providing VRB retains property ownership. Any road improvements within an RPZ should at least be farther from the runway than the existing road. Therefore, any future improvements in this area should at least be farther from the end of the runway than the existing road and will require an FAA RPZ analysis. It should be recognized that right-of-way ownership may influence the potential funding sources for improvements.

Vehicle Ground Access Recommendation

VRB should continue to monitor and work closely with the owners of the roads surrounding the airport to protect the airport and airspace.

Pedestrian Access

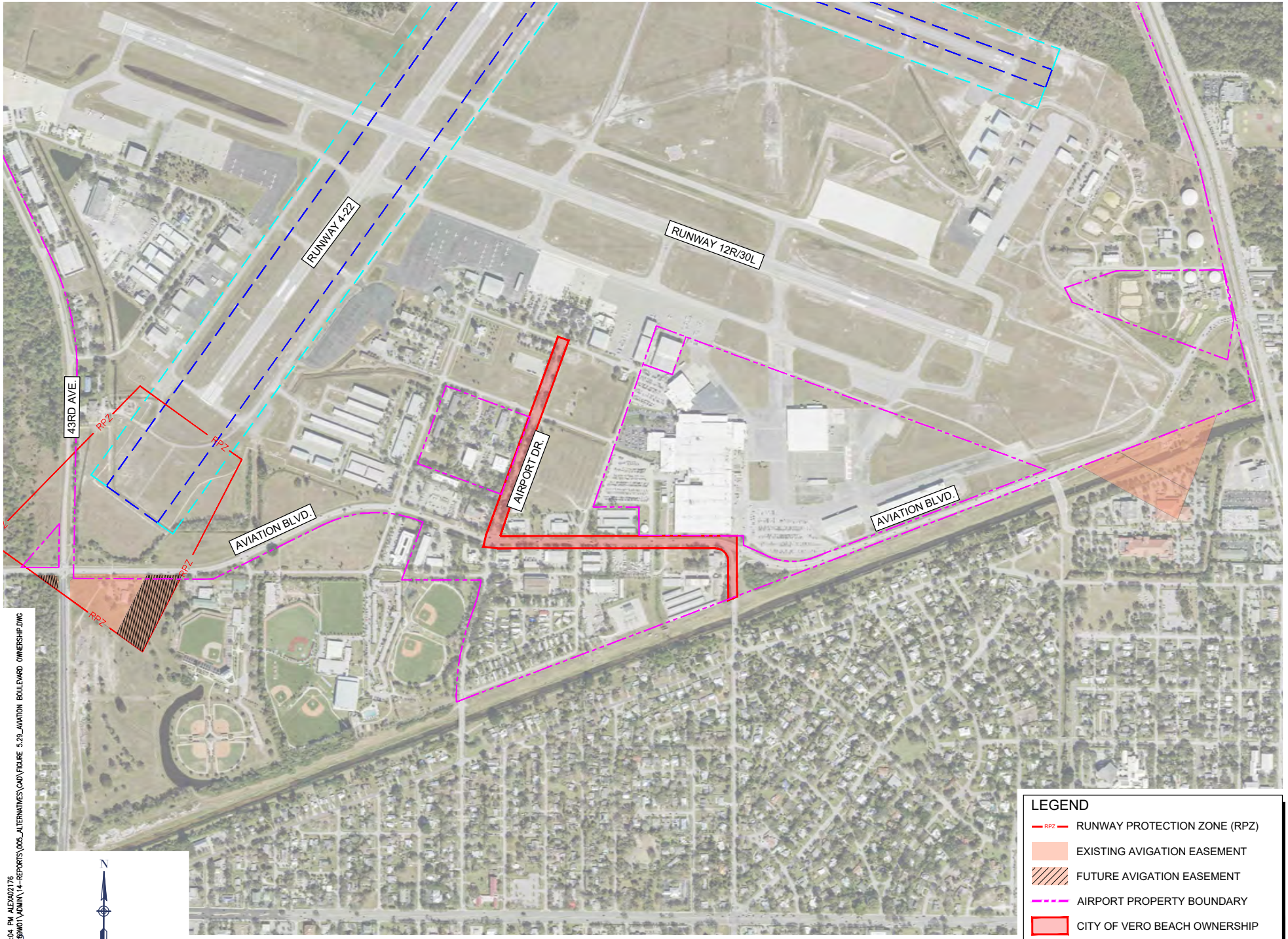
With the initiation of commercial service operations, automobile parking and passenger drop-off has increased. Pedestrian access improvements, such as lighted crosswalks and signs, should be considered during future landside improvement projects.

As mentioned in the commercial service facility section, the closure of a portion of Cherokee Drive, at least to through traffic, could occur to improve pedestrian flow to the terminal. As depicted on **Figure 5.32**, there are sidewalks along Airport Drive from the terminal to Dodger Road and along a portion of Airport Boulevard from Airport Drive to the entrance to Piper Aircraft east of Piper Drive.

VRB is in the process of adding parking and pedestrian access along Dodger Road, as shown on **Figure 5.33**. This parking will be used by patrons of nonaeronautical businesses in this area. The pedestrian access provides a connection between the terminal and nonaeronautical businesses, which include food and beverage, in this area.

Pedestrian Access Recommendation

VRB should consider closing Cherokee Drive between Airport Drive and Skyborne to through traffic to improve the pedestrian access from expanded future auto parking to the terminal.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

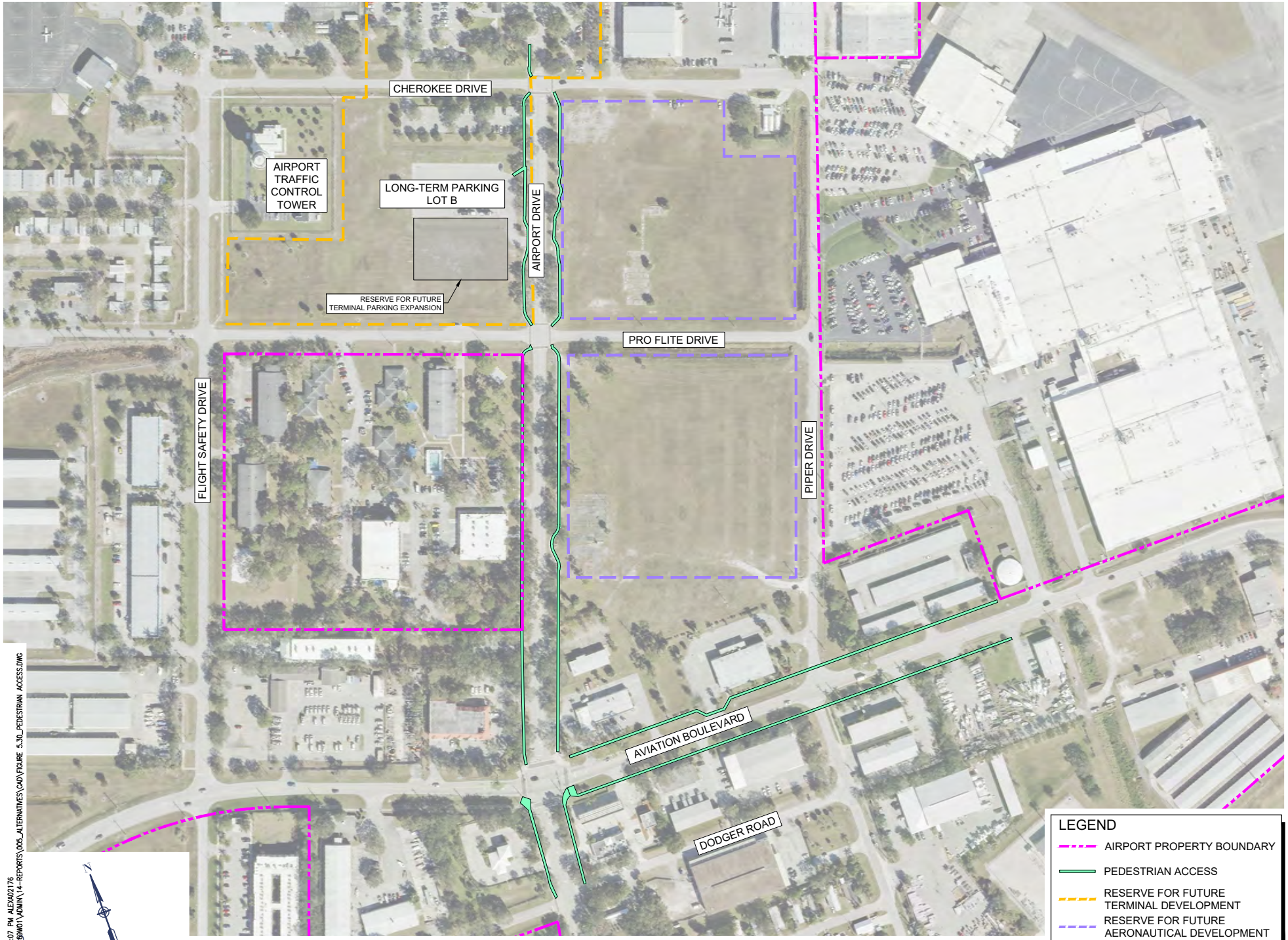
AUG 12, 2024 4:04 PM ALEXA02176
I:\20J08S\20A06B\W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.29_AVIATION BOULEVARD OWNERSHIP.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

AVIATION BOULEVARD OWNERSHIP

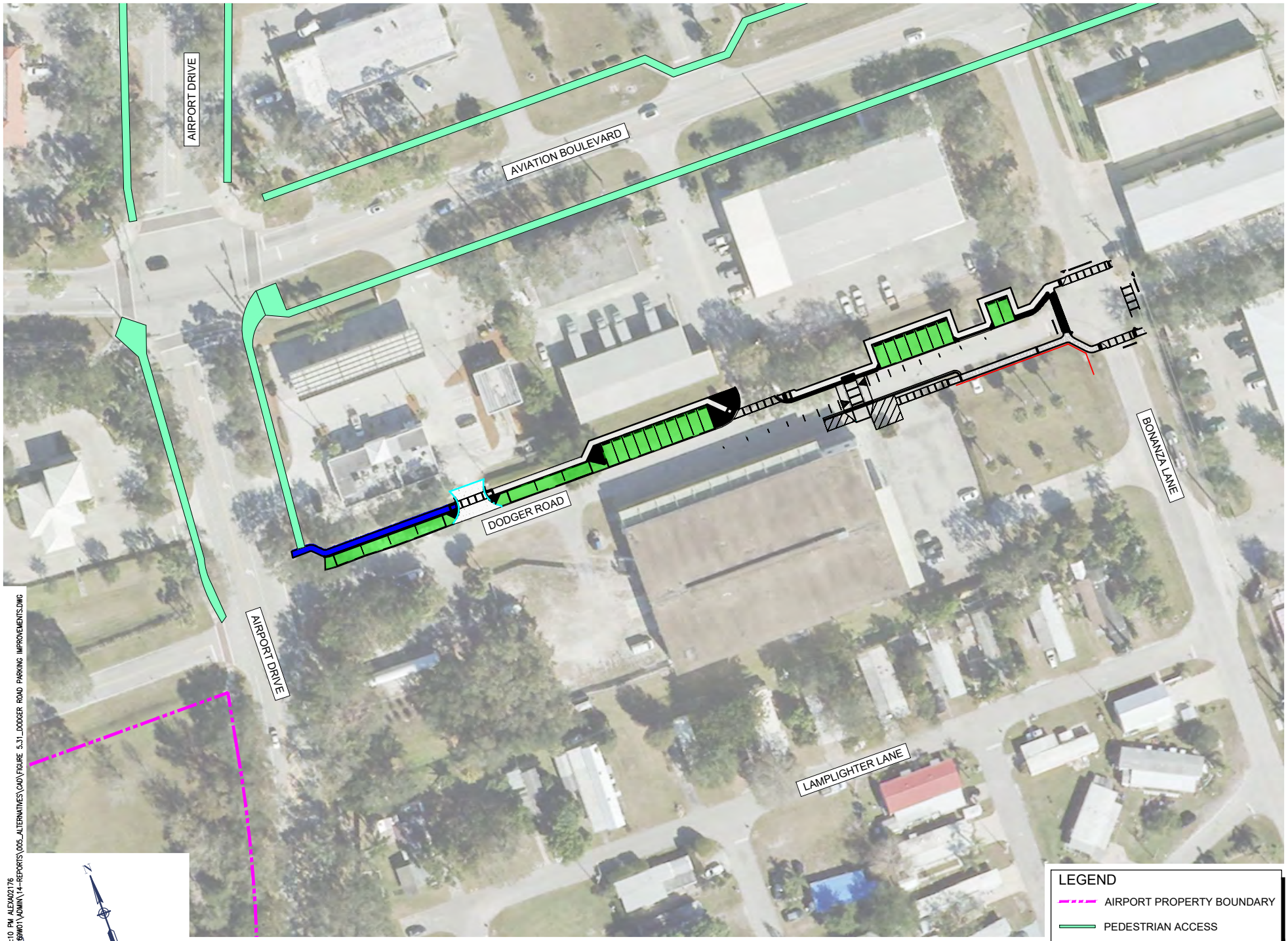
DRAWN BY:	JA	FIGURE 5.31
CHECKED BY:	SZ	



Source: Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 4:07 PM ALEXA02176
I:\20J08S\20A06BW01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.30_PEDESTRIAN ACCESS.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	PEDESTRIAN ACCESS
DRAWN BY: JA	CHECKED BY: SZ	FIGURE 5.32	



Source: Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 4:10 PM ALEXA02176
I:\20JOBS\20A0089W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.31_DODGER ROAD PARKING IMPROVEMENTS.DWG

VERO BEACH REGIONAL AIRPORT / HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	DODGER ROAD PARKING IMPROVEMENTS	DRAWN BY: JA CHECKED BY: SZ	FIGURE 5.33

Automobile Parking – FBOs and Flight Schools

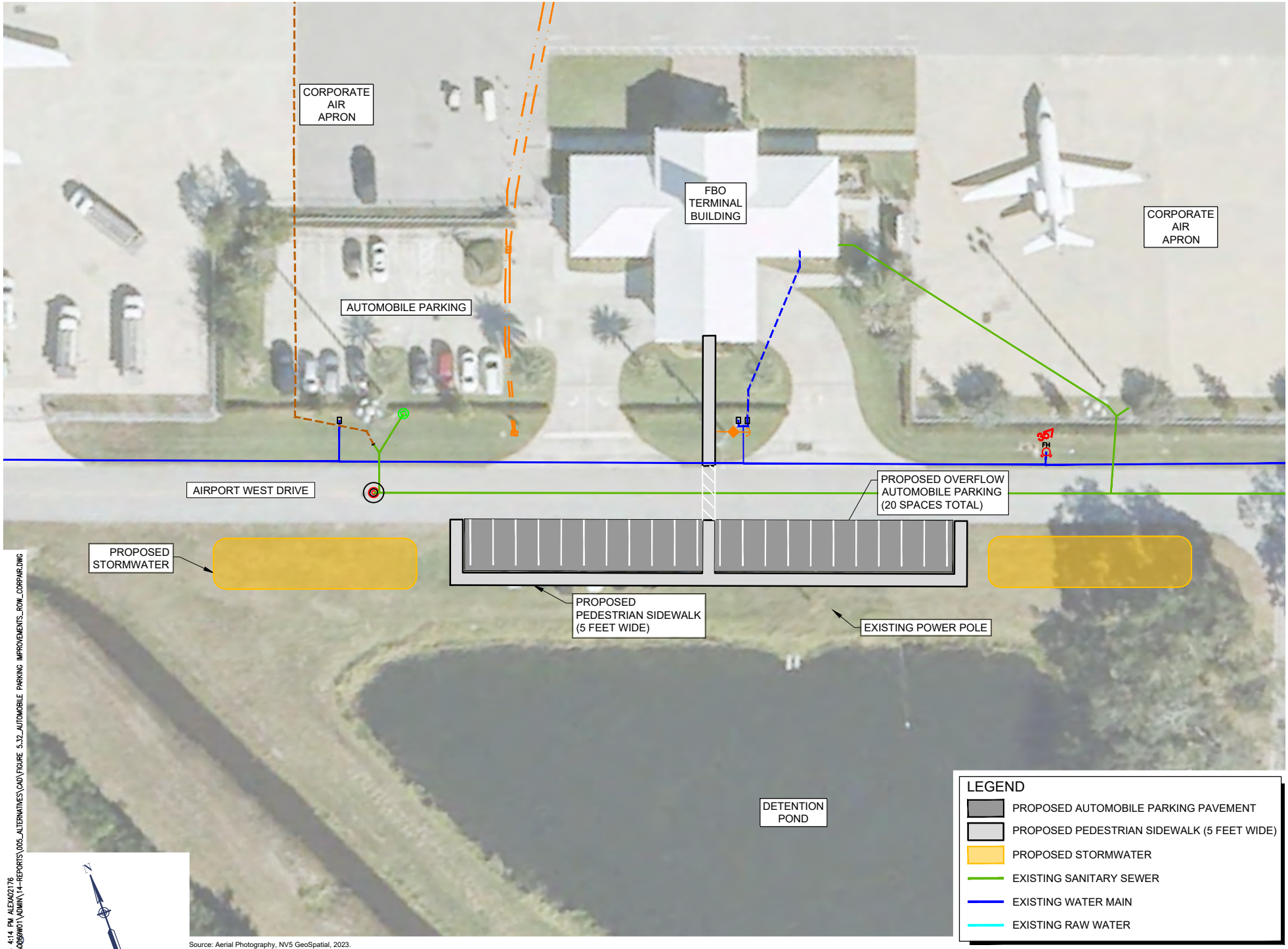
Corporate Air provides automobile parking for employees and visitors adjacent to the FBO terminal building. However, a grass area across from the FBO terminal building adjacent to Airport West Drive is used as overflow parking. **Figure 5.34** shows the area used for automobile parking overflow parking. Because of the proximity of the retention pond, grading improvements may be required. If the overflow area is paved, appropriate stormwater management should be included. Consideration may also be given to improving this area for regular parking use but without an impervious surface. Overflow student parking also occurs at Paris Air along Airport West Drive, outside its designated auto parking areas. **Figure5.35** shows additional right-of-way paved parking that could be developed to support tenants in this area.

Sun Aviation provides automobile parking for employees and visitors adjacent to the FBO terminal building. The existing automobile parking area provides adequate space.

Hertz car rental has a counter in the Sun Aviation terminal. Its rental cars overflow to a grass area south of Sun Aviation. Avis car rental has a facility in the terminal. **Figure 5.36** depicts the use of the parcel south of Sun Aviation (Parcel 6) for a consolidated rental cars parking location and support facilities, and additional automobile parking for Piper Aircraft.

Automobile Parking – FBOs Recommendation

VRB should work with the FBOs and flight schools to allow for sufficient parking and the necessary improvements within the existing or an expanded leasehold.

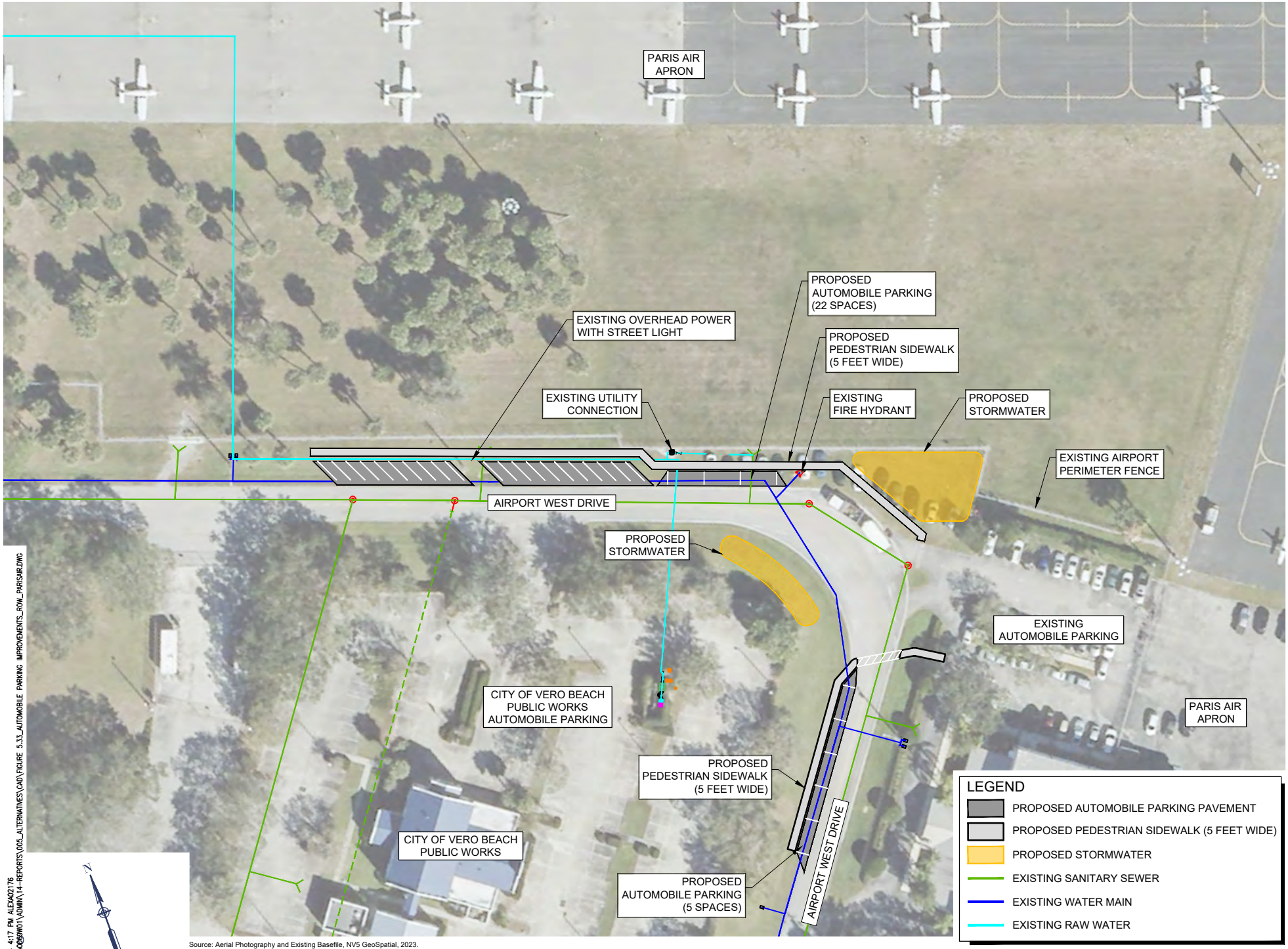


Source: Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 4:14 PM ALEXA02176
I:\20JOBS\20A0089W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.32_AUTOMOBILE PARKING IMPROVEMENTS_ROW_CORPAIR.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	CORPORATE AIR OVERFLOW RIGHT-OF-WAY PARKING

DRAWN BY:	JA	FIGURE 5.34
CHECKED BY:	SZ	



Source: Aerial Photography and Existing Basefile, NV5 GeoSpatial, 2023.

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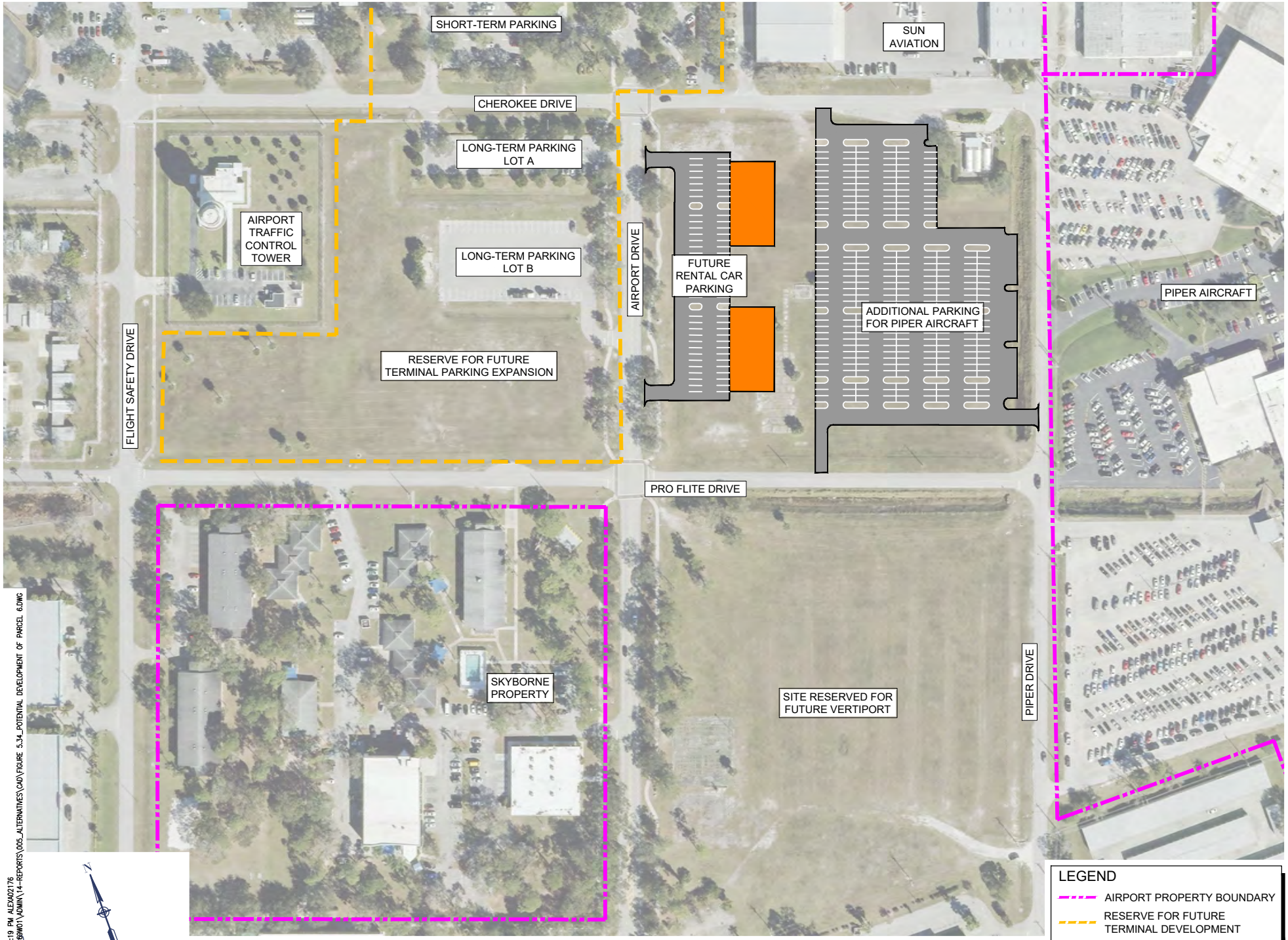
I:\20L08S\20A0089W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.33_AUTOMOBILE PARKING IMPROVEMENTS_ROW_PARISAIR.DWG

VERO BEACH REGIONAL AIRPORT	HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	PARIS AIR OVERFLOW RIGHT-OF-WAY PARKING

DRAWN BY:	JA	FIGURE 5.35
CHECKED BY:	SZ	



Source: Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 4:19 PM ALEXA02176
I:\20J08S\20A06BW01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.34_POTENTIAL DEVELOPMENT OF PARCEL 6.DWG

VERO BEACH REGIONAL AIRPORT	VERO BEACH REGIONAL AIRPORT MASTER PLAN	POTENTIAL DEVELOPMENT ON PARCEL 6	DRAWN BY: JA CHECKED BY: SZ
HANSON			FIGURE 5.36

5.14. Nonaeronautical Development

After identifying areas to meet the high aeronautical development demand, any remaining areas and those without potential airfield access could be considered for nonaeronautical use, as shown on **Figure 5.37**. Nonaeronautical development has the potential to provide airports additional revenue to diversify the revenue stream and help support airport operations. The primary area that could be opened for nonaeronautical development is west of 43rd Avenue outside of the RPZ. Any development in this area should keep a buffer between the nonaeronautical use and surrounding land use. Access and utilities would be needed to open this area for development. As a surplus property airport, the federal government has an interest in the land, so environmental documentation and any associated studies will be required to open this area for development, as further addressed in the environmental overview chapter.

Nonaeronautical Development Recommendation

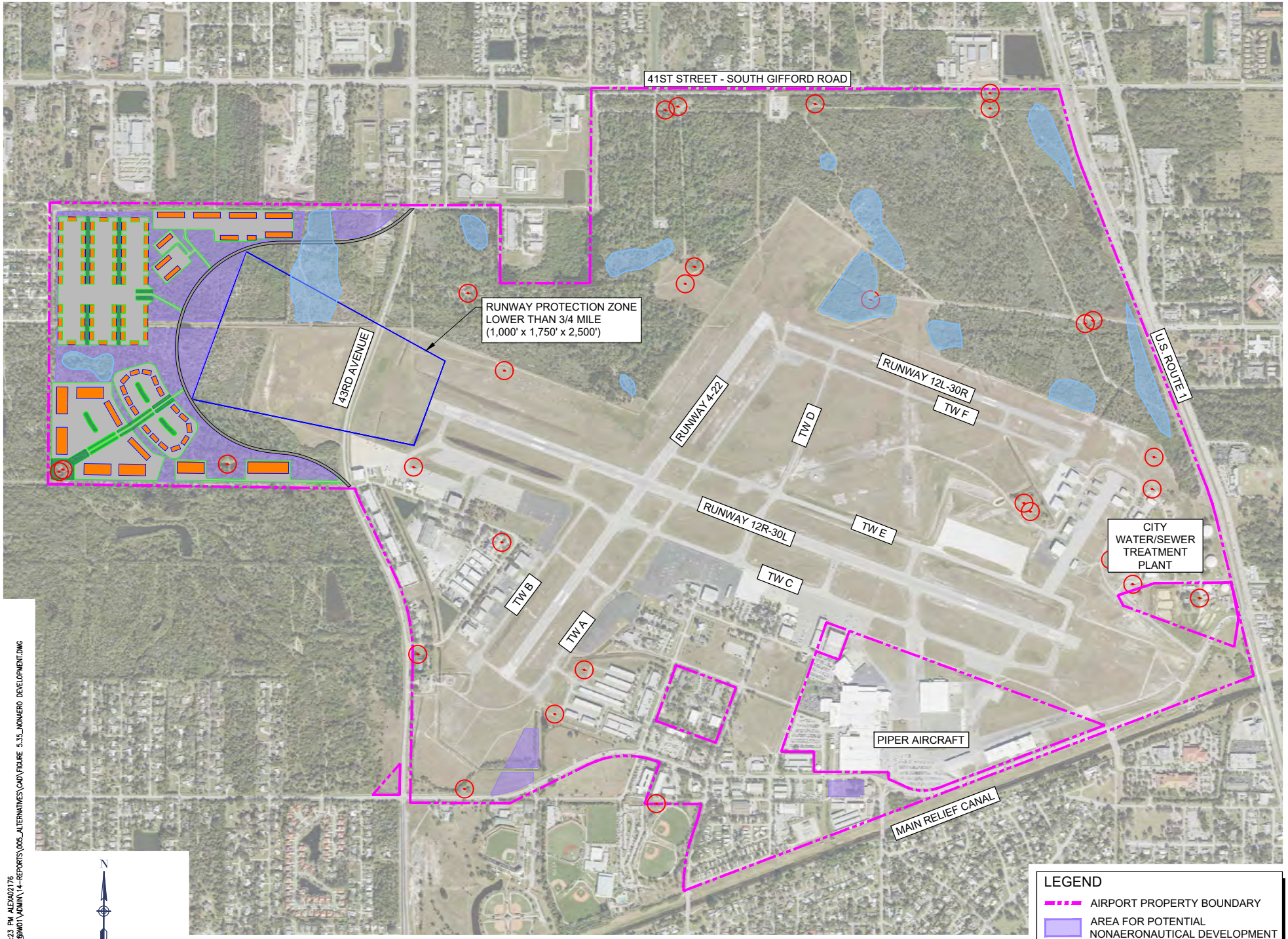
VRB should work with the city to update the city's comprehensive plan to allow for the development of airport property west of 43rd Avenue.

5.15. Utility Improvements

Once the preferred alternatives are identified for the future aeronautical and nonaeronautical development, utility upgrades to support the development will be identified so they can be considered as part of the development costs. In addition to the utilities to support VRB development, the city has identified the need to install a water main from the water plant to 43rd Avenue to support development west of the airport. Consideration should be given to a utility corridor for this water main in the vicinity of and parallel to Taxiway E, outside the TSA and preferably outside the TOFA. The location would provide the most direct route across the airport. This water main could also be used to support development in the northwest portion of the airport and airport property west of 43rd Avenue.

Utility Recommendation

The implementation planning should include the costs of any utility upgrades to open undeveloped areas on VRB for development. A utility corridor should be planned, with the appropriate lease, to provide a route from the water plant to 43rd Avenue for a new line that is needed to support development west of VRB. Utility costs for any relocations to accommodate proposed development should also be included in the implementation planning.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

AUG 12, 2024 4:23 PM ALEXA02176
I:\20J08S\20A008W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.35_NONAERO DEVELOPMENT.DWG

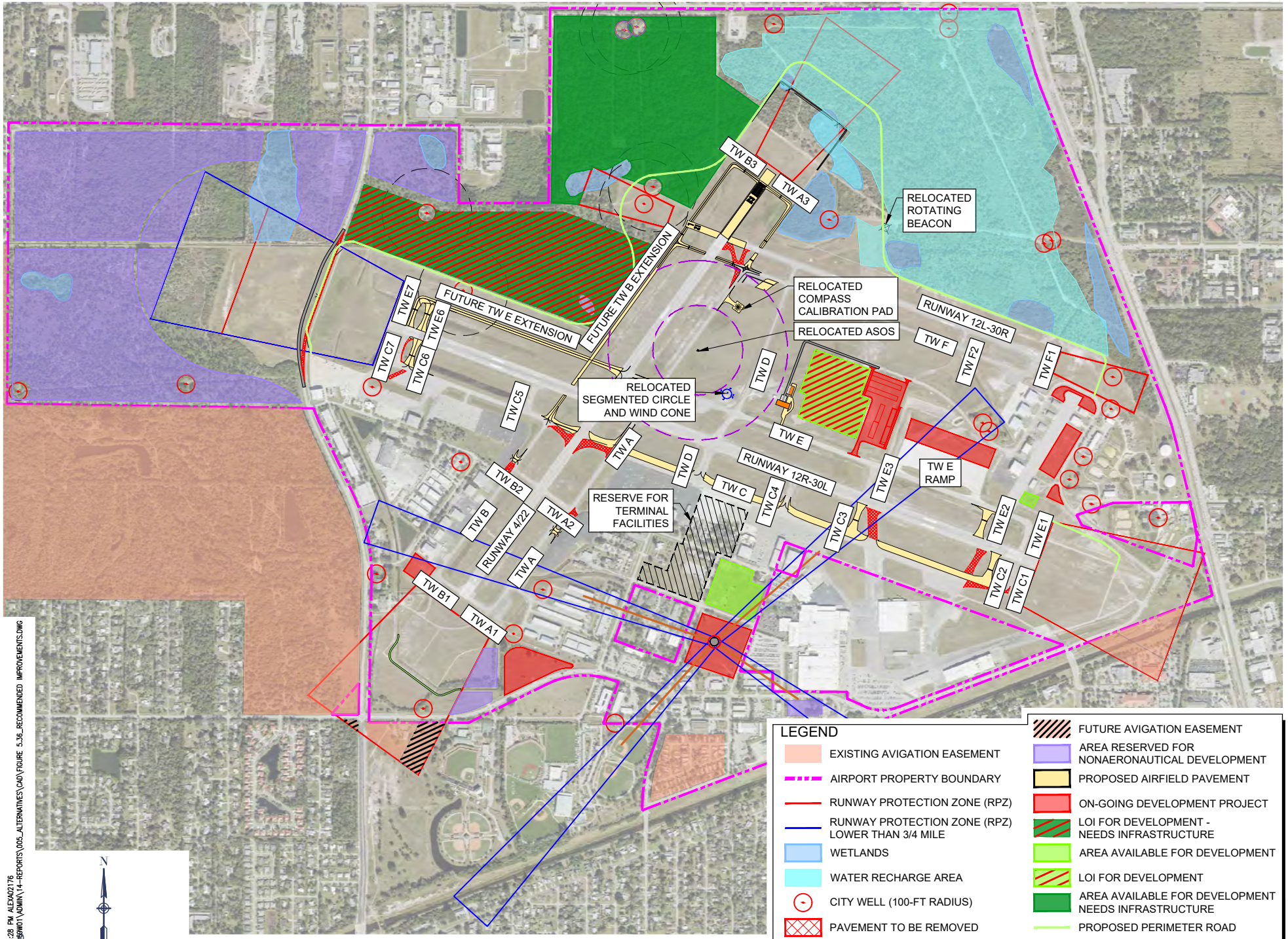
VERO BEACH REGIONAL AIRPORT / HANSON	VERO BEACH REGIONAL AIRPORT MASTER PLAN	AREAS FOR POTENTIAL NONAERONAUTICAL DEVELOPMENT	DRAWN BY: JA CHECKED BY: SZ	FIGURE 5.37

5.16. Recommended Development Plan

This chapter details potential and recommended alternatives for the airfield: runway and taxiway systems and navaids and airfield support infrastructure, emerging aircraft technologies, commercial service facilities, GA hangar facilities, other auto parking and utility improvements and nonaeronautical development opportunities. **Figure 5.38** summarizes the recommended alternatives that are listed below. The next step to finalize the recommended development plan is to obtain airport staff, tenant, and public input.

The recommended improvements identified through this alternative analysis include:

- Relocate 43rd Avenue and the perimeter road and fence to eliminate the use of declared distances on Runway 12R/30L.
- Pursue approach minimums of 1/2 a mile on Runway 12R with the installation of the MALSR and obstruction mitigation.
- Extend to the Runway 22 end up to 726 feet.
- Relocate the drainage swale and fence and RSA improvements to eliminate the need for declared distances on Runway 4/22.
- Extend Taxiway B the full length of Runway 4/22 with a 400-foot runway centerline to taxiway centerline separation and pavement at least 35 feet wide.
- Widen Taxiway E from 40 feet to 50 feet between Taxiway D and Runway 4/22.
- Extend Taxiway E the full length of Runway 12R/30L with a 400-foot runway centerline to taxiway centerline separation and pavement 50 feet wide.
- Realign Taxiway C for a 400-foot runway centerline to taxiway centerline separation the entire length.
- Modify Taxiway A1 to eliminate the direct apron-to-runway connection.
- Modify Taxiway C2 to eliminate the direct apron-to-runway connection and provide a standard 90-degree connector.
- Add a bypass taxiway from Taxiway C at the Runway 12R end.
- Rename taxiway end connectors and others as needed to support this change.
- Relocate the airfield rotating beacon, ASOS, and compass calibration pad.
- Work with the flight schools to minimize aircraft parking in RVZ.
- Reserve an area west and south of the terminal for commercial service facilities and prepare a terminal area plan.
- Reserve the midfield area opened by the ASOS relocation for T-hangar and box hangar development.
- Reserve the northwest portion of airport for general aviation facility development, an initial step to open the area for development.
- Work with the city to update its comprehensive plan to reclassify the northwest portion of airport and airport property west of 43rd Avenue for development.
- Reserve Parcel 10B along the north ramp for a supplemental airport operations facility.
- Upgrade the perimeter fence on the south side of airfield and add security cameras.
- Work with the city and county to plan upgrades to roads around the airport perimeter without impact to the airport.
- Consider closing Cherokee Drive between Airport Drive and Skyborne to improve the terminal area pedestrian access.
- Work with FBOs to allow sufficient parking and necessary improvements in leaseholds.



Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

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I:\20J08S\20A008W01\ADMIN\14-REPORTS\005_ALTERNATIVES\CAD\FIGURE 5.36_RECOMMENDED IMPROVEMENTS.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

RECOMMENDED IMPROVEMENTS

DRAWN BY: JA
CHECKED BY: SZ

FIGURE 5.38

6. Facilities Implementation Plan

6.1. Introduction

The analysis conducted in the previous chapters identified the facility needs and evaluated alternatives to meet those needs based on the current and forecasted aviation activity. Once the preferred alternatives have been identified, the next step in the master planning process is to develop the capital improvement plan. When the capital improvement plan is combined with the pro forma cash flow analysis, it becomes the implementation plan.

The capital improvement plan should include all development projects identified in the master plan, regardless of eligibility for FAA or state grant funding. In addition, it should include all capital maintenance and rehabilitation projects necessary to preserve infrastructure. This provides a comprehensive list of all the airport's needs that are coordinated with regard to schedule, scope and likely funding source. In addition, enabling activities, such as environmental analysis or design, may be identified separately for larger or new development projects. Considering these items, the capital improvement plan prioritizes each project into short- (one to five years), intermediate- (six to 10 years) and long-term (11 to 20 years) and aligns projects with potential funding opportunities. The proposed order of the projects may be further refined when considering the cash flow pro forma and should remain flexible to respond to user needs or new funding opportunities.

While projects are identified by time frame, the actual development should be initiated based on users' needs and funding availability. The implementation plan includes probable development costs with potential funding sources from federal, state and local sources. The probable construction costs reflect 2024 U.S. dollars. The rate of inflation, as identified by the consumer price index, can be used to convert the 2024 dollars into future-year dollars.

The preferred alternatives include the consideration of areas to be reserved for stormwater management to support the proposed development. A stormwater master plan was started while this airport master plan was ongoing. The stormwater master plan will use the airport master plan's proposed development and further refine areas to be reserved for stormwater management.

6.2. Joint Automated Capital Improvement Program

The Florida Department of Transportation (FDOT) maintains the Joint Automated Capital Improvement Program (JACIP). The JACIP is the official method of requesting funding from the FAA and FDOT. Airport sponsors enter their project funding requests for the next five years into the JACIP. Airports are required to update the JACIP each year and when an airport master plan is approved. When preparing the airport master plan capital improvement program, the projects in the JACIP programmed for funding are taken into account and typically included as part of the short-term development, unless a change in timing is recommended in the airport master plan.

6.3. Grant Funding Sources

The most common grant funding sources for publicly owned, public-use Florida airports are FAA and FDOT grant funding. The FAA and FDOT have established and published priority ranking systems to evaluate projects. The FAA system places the highest priority on safety, security and the preservation of infrastructure, as detailed in FAA Order 5090.5.

Federal Funding

The primary federal funding source is through the AIP. The FAA Reauthorization Act of 2024, signed into law May 16, 2024, authorizes the AIP program through FY 2028. The significant funding provisions of the reauthorization act include increasing the authorized annual AIP program spending level to $4 billion, up from $3.35 billion; allowing the FAA the authority to incorporate price adjustment provisions in its grant agreements to account for increases in labor or material costs due to inflation; temporarily increasing the federal share of AIP projects for FYs 2025 and 2026 from 90% to 95% for allowable project costs for grants at nonhub and nonprimary airports; and increasing the primary entitlement from $1 million to $1.3 million.

AIP Entitlement Funding: The AIP entitlement funds are based on the airport's NPIAS classification and the amount of passenger and cargo activity at airports supporting commercial service. Passenger enplanement and cargo levels are two years in arrears; for example, FY 2022 enplanements set FY 2024 AIP entitlement funds. Thus, VRB will still be in the nonprimary entitlement category until FY 2025, when VRB will be eligible for passenger entitlements that are higher than nonprimary entitlements. Under the AIP reauthorization that runs through 2028, nonprimary entitlements provide airports up to $150,000 annually, based on the AIP meeting a minimum congressional appropriation level, to fund eligible projects. The airport sponsor must demonstrate the need for at least an annual average of $150,000 of capital needs over its five-year capital improvement program. Airport sponsors can defer drawing their annual entitlements until the fourth year of funding availability to accumulate funds for larger projects. The unused funds expire after four years, unless obligated by a sponsor to an eligible project or transferred to another NPIAS airport.

VRB exceeded 10,000 passenger boardings in FY 2023. So, starting in FY 2025, under the AIP reauthorization that runs through 2028, it will be eligible for a minimum of $1.3 million in primary entitlement funds.

Table 6.1[31] shows the general types of projects eligible and ineligible for AIP grant funding at all NPIAS airports; FAA Order 5100.38D provides details on AIP project funding eligibility.

TABLE 6.1: AIP ELIGIBLE AND INELIGIBLE PROJECTS FOR ALL AIRPORTS

Eligible Projects	Ineligible Projects
Airfield drainage	Artwork
Airfield lighting	Development that exceeds FAA standards
Apron construction/rehabilitation	Development for exclusive use
Environmental studies	Improvements for commercial enterprises
General aviation terminal buildings	Industrial park development
Land acquisition	Landscaping
Certain navaids (e.g., REILs, PAPIs)	Maintenance equipment (e.g., mowers)
Planning studies	Marketing plans
Runway construction/rehabilitation	Office equipment
Safety area improvements	Training
Taxiway construction/rehabilitation	Airport operations costs
Weather observation stations (AWOS)	FBO support areas
ARFF and snow removal equipment (as justified)	Airport vehicles

[31] FAA Airports Division Central Region, AIP Sponsor Guide, https://www.faa.gov/sites/faa.gov/files/airports/central/aip/sponsor_guide/0100.pdf, June 28, 2013

AIP State Apportionment Funding: Available to all general aviation airports within a state, including reliever and nonprimary commercial service airports, these funds are distributed by the FAA's Airports District Office based on a priority ranking of competitive applications. The amount of funding apportioned to each state is formula-based, considering each state's population and area.

AIP Discretionary Funding: After the formula funds, such as entitlements and state apportionment, are taken from the AIP appropriation, the discretionary programs are funded. The discretionary funds include mandatory set-aside requirements for noise mitigation, military airports and reliever airports. The remaining funds are divided to fund safety, security, capacity and noise projects and pure discretionary funding. Discretionary funding also comes from passenger facility charge turn-backs (returned funds) from large- and medium-hub airports and rollover funds, which are entitlement grant monies an airport elects to roll over for use in a future year.

The FAA uses a priority system formula to direct AIP grant funds to the highest-priority projects within the NPIAS. FAA Order 5090.5 defines the formula and includes tables that show the result of the formula for eligible project types for different-sized airports.

Higher-priority projects are the most competitive at the national level for discretionary funds, whereas lower-priority projects typically need to be funded with entitlement funds or state apportionment. The proposed development at VRB has a range of priority levels. Thus, while the development plan indicates a potential funding source, the airport sponsor should coordinate with FDOT and the FAA's Airports District Office to identify the most likely funding source for each project. When pursuing state apportionment or discretionary funds, an airport sponsor must pledge any available entitlement funding toward the same project. Under the current AIP authorization, the federal share of AIP-eligible projects is increased to 95% for FY 2025 and FY 2026 and is 90% for FY 2027 and FY 2028.

Passenger Facility Charges (PFC): Commercial service airports are allowed under U.S. Code Title 49, Subtitle VII, Part A: Air Commerce and Safety, §40117: Passenger Facility Charges to impose a fee for passengers of an air carrier enplaned at the airport. Airports can request authority from the FAA to impose a PFC of $1, $2, $3, $4 or $4.50 per passenger enplanement, as long as the passenger is not enplaning on a flight subsidized under the Essential Air Service program.

Projects proposed to use PFCs must meet at least one objective of the program, which includes preserving or enhancing the safety, security or capacity of the national air transportation system, reducing noise and enhancing opportunities for competition between air carriers. PFCs can be used to fund:

- Past or future AIP-eligible development projects or planning
- Terminal development
- Airport noise compatibility planning
- Financing costs and debt service

Prior to applying to the FAA to establish and use PFC funding, an airport must ensure its project is justified, determine the amount and duration of the PFC, ensure the project can be initiated within two years of approval and consult with air carriers. Airports should plan for approximately 120 to 180 days to develop a compliant PFC application, complete the required consultations and receive a determination from the FAA.

As discussed in the aviation forecast chapter, passenger enplanements at VRB are forecasted to increase from more than 10,000 in 2023 to 38,400 in 2028 and 55,500 in 2043. VRB is on track to exceed the 2024 forecast

enplanements in 2024, with more than 49,000 enplanements from January to May 2024. Based on the forecast, PFCs could provide an opportunity to conservatively generate approximately $175,000 to $250,000 annually between 2028 and 2043, increasing with higher enplanement levels. Additional considerations when contemplating the implementation of a PFC program include the cost of preparing project applications, annual audits and periodic FAA reporting requirements. The costs of a PFC program need to be weighed against the potential revenue.

Bipartisan Infrastructure Law (BIL) Funding: As part of the BIL, airports will receive additional funding for AIP-eligible and most passenger facility charge-eligible projects through the Airport Infrastructure Grant (AIG) program. There are several airport funding programs in the BIL, including national competitive programs for terminal development, airport-owned air traffic control towers and the allocation of BIL funds based on an airport's NPIAS classification. The AIG program funding is authorized and appropriated for FYs 2022–26. The AIG funds must be obligated to a project within four years of becoming available. If not, they will roll to a national competitive discretionary fund. The AIG program requires a local match similar to the AIP. The annual allocated amount varies each year, because it is based on capital needs within the various classifications of airports, which are updated annually. VRB, classified in the NPIAS as a national general aviation airport, has received about $1 million in BIL funds each year in FYs 2022–24. In FY 2025, when VRB is classified as a primary airport, this amount will increase.

FDOT Funding

The Florida Aviation Project Handbook provides guidelines for FDOT funding. FDOT grant funds can be used for building and maintaining runways and taxiways, eliminating airport hazards, protecting airspace, development plans, acquiring land and buildings and constructing terminal buildings and other facilities. The State Transportation Trust Fund is the primary source of funding for the FDOT aviation grant program. It is funded by the state's motor fuel and aviation fuel tax collections.

Projects must be consistent with the airport's role, as defined in the Florida Aviation System Plan. VRB is classified by FDOT in the category of general aviation and "emerging" commercial service airports with fewer than 100,000 passenger boardings per year. As such, FDOT may provide up to 80% of the nonfederal share on FAA-funded projects or 80% of the total project cost on state-local projects. If VRB exceeds 100,000 passenger boardings per year, FDOT will only fund 50% of state-local projects. FDOT may also provide up to 50% of the costs to build on-airport, revenue-producing capital projects, such as industrial park facilities. There are also conditions that qualify as strategic airport investment projects, for which FDOT may fund projects at up to 100%. The availability of funding and shares of project costs are limited by the amounts appropriated by the Florida Legislature and the subsequent allocation to each FDOT District Office. VRB is in FDOT District 4. FDOT District 4 typically only provides 50% of the nonfederal share on FAA-funded projects.

FDOT's primary project funding priorities are[32]:

- Maximizing the allocation of federal funds
- Complying with state airport licensing standards
- Complying with state and federal standards for safety
- Complying with state and federal standards for security
- Preserving airport infrastructure
- Increasing the capacity of Florida's airports

6.4. Proposed Capital Improvements

After identifying the preferred development, the first step in developing an airport capital improvement plan is to determine the probable project cost for each proposed improvement. The probable project cost in this airport master plan was prepared by analyzing similar airport construction projects. Each probable project cost includes the professional services, design, survey, etc., related to the accomplishment of the overall project. The probable project costs were developed to a planning level of detail. They should be further refined as design is undertaken for the projects.

The proposed improvements are grouped into short- (2024–29), intermediate- (2030–34) and long-term (2035–43) planning horizons, aligning with forecast activity and user and facility needs within those periods. The year durations differ slightly from the aviation activity forecast due to the period to prepare the airport master plan and the grant cycles of funding agencies. Please note, although a project is listed under a specific year or period to meet the demand, as analyzed in this airport master plan, the project may need to move up or down the list, depending on the realized demand or future funding availability.

The following sections describe proposed improvements based on the planning horizon in the capital improvement plan. The first of these sections contains a list of the ongoing projects at VRB, whether funded prior to 2024 or by an airport user.

Ongoing Projects

Because of the demand at VRB, several aeronautical development projects have been ongoing during this airport master plan or may begin before this airport master plan is completed. Below is a list of these projects and the funding sources associated with the project. Because these projects already have a committed funding source, they were not considered in the capital improvement plan.

- Midfield hangar development – privately funded
- Development of U.S. Customs and Border Protection facility – FBO-funded
- Rehabilitate Taxiway B design – grant-funded

[32] 2024 Florida Aviation Project Handbook, accessed February 27, 2024. https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/aviation/florida-aviation-project-handbook-current.pdf?sfvrsn=116003ee_3

Short-Term Capital Improvement Projects

The proposed improvements at VRB during the short-term planning horizon from 2024 through 2029 are listed in **Table 6.2** and shown on **Figure 6.1**. The short-term projects focus on improving the parallel taxiway infrastructure; expanding the terminal facilities; safety and security enhancements; improving drainage, based on the forthcoming stormwater master plan recommendations to support development; and business park improvements.

TABLE 6.2: SHORT-TERM CAPITAL IMPROVEMENT PROJECTS

#	Project	Year	Federal	State	Local	Total
Short-Term (1–5 Years) (2024–28)						
1	Redevelop Commercial Park (Phase 2)	2024	-	$235,000	$ 235,000	$470,000
2	Extend Taxiway B (EA & Design)	2024	-	$340,000	$80,000	$420,000
3	Complete Airport Master Plan Update	2024	$102,006	$5,667	$5,667	$113,340
4	Complete Storm Water Master Plan	2024	$65,597	$3,644	$3,644	$72,886
5	Rehabilitate Airport Terminal Construction Phase I	2024	-	$480,000	$120,000	$600,000
6	Rehabilitate Airport Terminal Construction Phase II	2024	$1,530,000	$565,000	$255,000	$2,350,000
7	Rehabilitate Taxiway B Construction	2024	$1,980,000	$110,000	$110,000	$2,200,000
8	Expand Terminal Parking Lot	2024	-	$1,000,000	$250,000	$1,250,000
		Yearly Total 2024	**$3,677,603**	**$2,739,311**	**$1,059,311**	**$7,476,226**
9	Acquire ARFF Vehicle	2025	-	$1,015,840	$253,960	$1,269,800
10	Replace Hangar Roof	2025	-	$800,000	$200,000	$1,000,000
11	Install Airport Utilities and Critical Infrastructure	2025	-	$500,000	$500,000	$1,000,000
12	Rehabilitate Taxiway A South of Runway 12R – Design	2025	$ 313,500	$8,300	$8,300	$330,000
13	Upgrade Airfield Electrical	2025	-	$1,440,000	$360,000	$1,800,000
14	Construct Connector Taxiway C6	2025	$1,125,000	$ 62,500	$62,500	$1,250,000
		Yearly Total 2025	**$1,501,000**	**$3,795,390**	**$1,353,510**	**$6,649,800**
15	Relocate Auto Parking to Expand Passenger Terminal Building	2026	$1,320,300	$34,750	$34,750	$1,389,800
16	Rehabilitate Taxiway A South of Runway 12R – Construction	2026	$1,947,500	$51,250	$ 51,250	$2,050,000
17	Extend Taxiway B (Construction)	2026	-	$2,960,000	$740,000	$3,700,000
18	Relocate ASOS, Wind Cone and Segmented Circle	2026	-	$280,000	$70,000	$350,000
		Yearly Total 2026	**$3,267,800**	**$3,326,000**	**$896,000**	**$7,489,800**
19	Improve Airport Business Park	2027	-	$800,000	$ 200,000	$1,000,000
		Yearly Total 2027	**$0**	**$800,000**	**$200,000**	**$1,000,000**
20	Extend/Mark/Light Taxiway E West of Runway 4 – Design & EA	2028	$1,260,000	$70,000	$70,000	$1,400,000
21	Extend Runway 4/22 and Runway 12L/30R, Phase 1 Environmental	2028	$360,000	$20,000	$20,000	$400,000
		Yearly Total 2028	**$1,620,000**	**$90,000**	**$90,000**	**$1,800,000**

Source: Hanson Professional Services Inc., 2024.

Improve Parallel Taxiway Infrastructure

Rehabilitate Taxiways A and B: With the high level of activity at VRB, the parallel taxiway system is vital to maximizing the safety and efficiency of the airfield. In the short-term period, taxiways A and B parallel to Runway 4/22 are programmed to be rehabilitated. This work was programmed based on the PCI rating of these pavements. This work will extend the useful life of the facilities.

Extend Taxiway B: Taxiway B is a partial parallel taxiway on the west side of crosswind Runway 4/22. The taxiway connects the Runway 4 end to Runway 12R/30L. Taxiway B provides access to the west-side general aviation facilities that include an FBO and one of two flight schools at VRB. The proposed improvement to extend Taxiway B would provide a full-length parallel taxiway on both sides of Runway 4/22. The taxiway extension will improve airfield circulation and access to future development in the northwest quadrant. It will also reduce runway crossings when Runway 4/22 is in use, because aircraft parked west of Runway 4/22 could taxi to and from parking positions without crossing Runway 4/22.

Extend and Widen Taxiway E: Taxiway E is a partial parallel taxiway on the north side of the primary runway, Runway 12R/30L, and provides access to general aviation facilities in the midfield along the Taxiway E ramp and on the north ramp. The taxiway connects the Runway 30L end to Runway 4/22. To reduce runway crossings with the increasing hangar facilities in the midfield area, Taxiway E should be extended the full length of Runway 12R/30L. The proposed improvement to extend Taxiway E would provide a full-length parallel taxiway on both sides of Runway 12R/30L. In addition to improving airfield circulation, it would provide access to future development in the northwest quadrant of the airfield. The first step to extend Taxiway E is the environmental documentation, anticipated to be an environmental assessment and design. To complement the extension of Taxiway E, the portion of Taxiway E between Taxiway A and Runway 4/22 will be widened to 50 feet to provide a consistent width the entire length of the taxiway.

Construct Runway 12R Connector Taxiways: To increase airfield efficiency, a bypass connector taxiway is proposed on the south side, near the end of Runway 12R. This connector taxiway will allow air traffic control to route departing aircraft around any aircraft holding for a departure clearance. In addition to the new connector on the Runway 12R end, Taxiway C3 is proposed to be relocated as an intermediate-term project to remove a direct apron-to-runway connection to meet FAA design standards and provide an enhanced margin of safety.

Expand Passenger Terminal Building

With the initiation of commercial service operations at VRB by Breeze Airways in February 2023, the commercial service operations are on pace to surpass the short-term operations forecast. With the increase of these operations, passenger terminal improvements are necessary. These improvements include expanding the TSA security checkpoint area, departing passenger hold rooms and arriving passenger baggage claim area. There are several phases to the terminal facility improvements. The first phase focuses on structural improvements and expanding auto parking. The next phase relocates short-term parking next to the terminal building to open space for additional terminal building facilities.

Safety and Security

Acquire ARFF Vehicle: To meet the Part 139 requirements to support commercial services, VRB leased an additional ARFF vehicle. This project will assist VRB in maintaining its airport rescue and firefighting capability.

Upgrade Airfield Electrical: To avoid outages, VRB needs to replace the airfield electrical system because it is reaching the end of its useful life. The short-term airfield electrical upgrades include relocating the airport beacon to make it more accessible for maintenance.

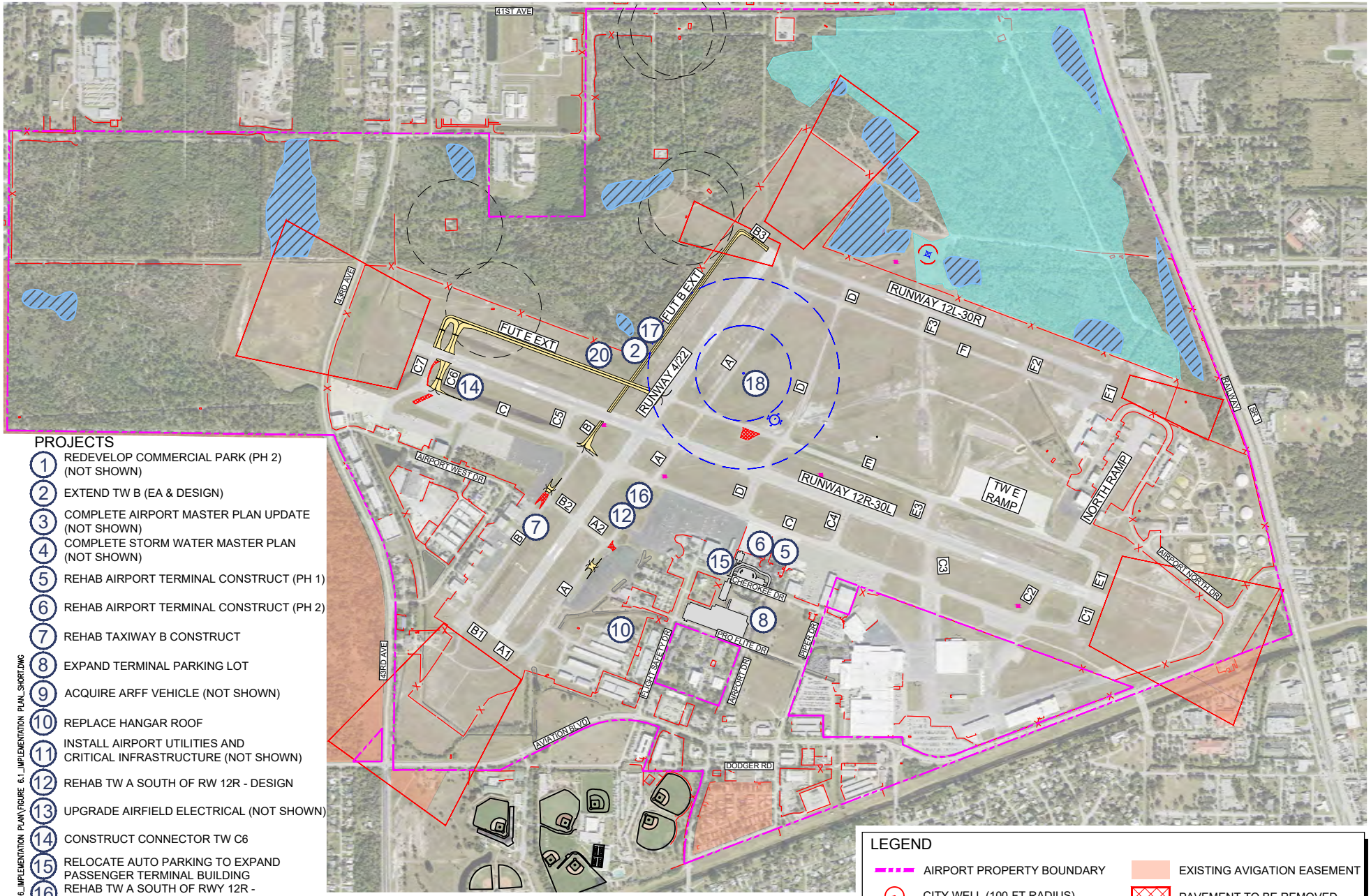
Development Opportunities

Improve Business Park: VRB has significant nonaeronautical development on the airport property. The revenue from this development is used to support airport operations. There are several business park development projects included in the capital improvement plan. The short-term business park improvements focus on the area along Dodger Road to improve parking and pedestrian accessibility.

Replace Hangar Roofs: The city owns T-hangars on the west side of the airport. The roofs on the oldest three T-hangars need replacement to preserve the utility of these facilities.

Relocate ASOS, Wind Cone and Segmented Circle

The relocation of the ASOS, wind cone and segmented circle is a priority project for VRB. To meet the FAA-required clearances for ASOS equipment to provide unobstructed weather readings, the location of the ASOS creates setback and height limitations on the future development of the midfield area. Relocating the ASOS to the west between taxiways A and D, in an area already height-restricted for development, would provide additional space in the midfield for development, which has access to utilities and stormwater provisions for future development, and would support additional revenue for the airport. VRB also plans to relocate the primary wind cone and segmented circle to avoid impacts from future development. VRB has received a letter of intent from a developer interested in the area when it becomes suitable for hangar construction.



PROJECTS

1. REDEVELOP COMMERCIAL PARK (PH 2) (NOT SHOWN)
2. EXTEND TW B (EA & DESIGN)
3. COMPLETE AIRPORT MASTER PLAN UPDATE (NOT SHOWN)
4. COMPLETE STORM WATER MASTER PLAN (NOT SHOWN)
5. REHAB AIRPORT TERMINAL CONSTRUCT (PH 1)
6. REHAB AIRPORT TERMINAL CONSTRUCT (PH 2)
7. REHAB TAXIWAY B CONSTRUCT
8. EXPAND TERMINAL PARKING LOT
9. ACQUIRE ARFF VEHICLE (NOT SHOWN)
10. REPLACE HANGAR ROOF
11. INSTALL AIRPORT UTILITIES AND CRITICAL INFRASTRUCTURE (NOT SHOWN)
12. REHAB TW A SOUTH OF RW 12R - DESIGN
13. UPGRADE AIRFIELD ELECTRICAL (NOT SHOWN)
14. CONSTRUCT CONNECTOR TW C6
15. RELOCATE AUTO PARKING TO EXPAND PASSENGER TERMINAL BUILDING
16. REHAB TW A SOUTH OF RWY 12R - CONSTRUCTION
17. EXTEND TW B - CONSTRUCTION
18. ASOS RELOCATION
19. AIRPORT BUSINESS PARK IMPROVEMENTS (NOT SHOWN)
20. EXTEND/MARK/LIGHT TW E WEST OF RW 4 - DESIGN & EA
21. EXTEND RW 4/22 AND RW 12L/30R, PH 1 ENVIRONMENTAL (NOT SHOWN)

LEGEND

- AIRPORT PROPERTY BOUNDARY
- CITY WELL (100-FT RADIUS)
- WETLANDS
- WATER RECHARGE AREA
- RUNWAY PROTECTION ZONE (RPZ)
- EXISTING AVIGATION EASEMENT
- PAVEMENT TO BE REMOVED
- FUTURE AVIGATION EASEMENT
- FUTURE AIRFIELD PAVEMENT
- FUTURE LANDSIDE PAVEMENT

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GRAPHIC SCALE IN FEET

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

VERO BEACH REGIONAL AIRPORT	VERO BEACH REGIONAL AIRPORT MASTER PLAN	IMPLEMENTATION PLAN SHORT-TERM IMPROVEMENTS	DRAWN BY: JA CHECKED BY: SZ	FIGURE 6.1

AUG 01, 2024 9:55 AM ALEX02176
I:\20J08S\20A008W01\ADMIN\14-REPORTS\006_IMPLEMENTATION PLAN\FIGURE 6.1_IMPLEMENTATION PLAN_SHORT.DWG

Intermediate-Term Capital Improvement Program

The proposed improvements at VRB during the intermediate-term planning horizon of 2029 through 2033 are listed in **Table 6.3** and shown on **Figure 6.2**.

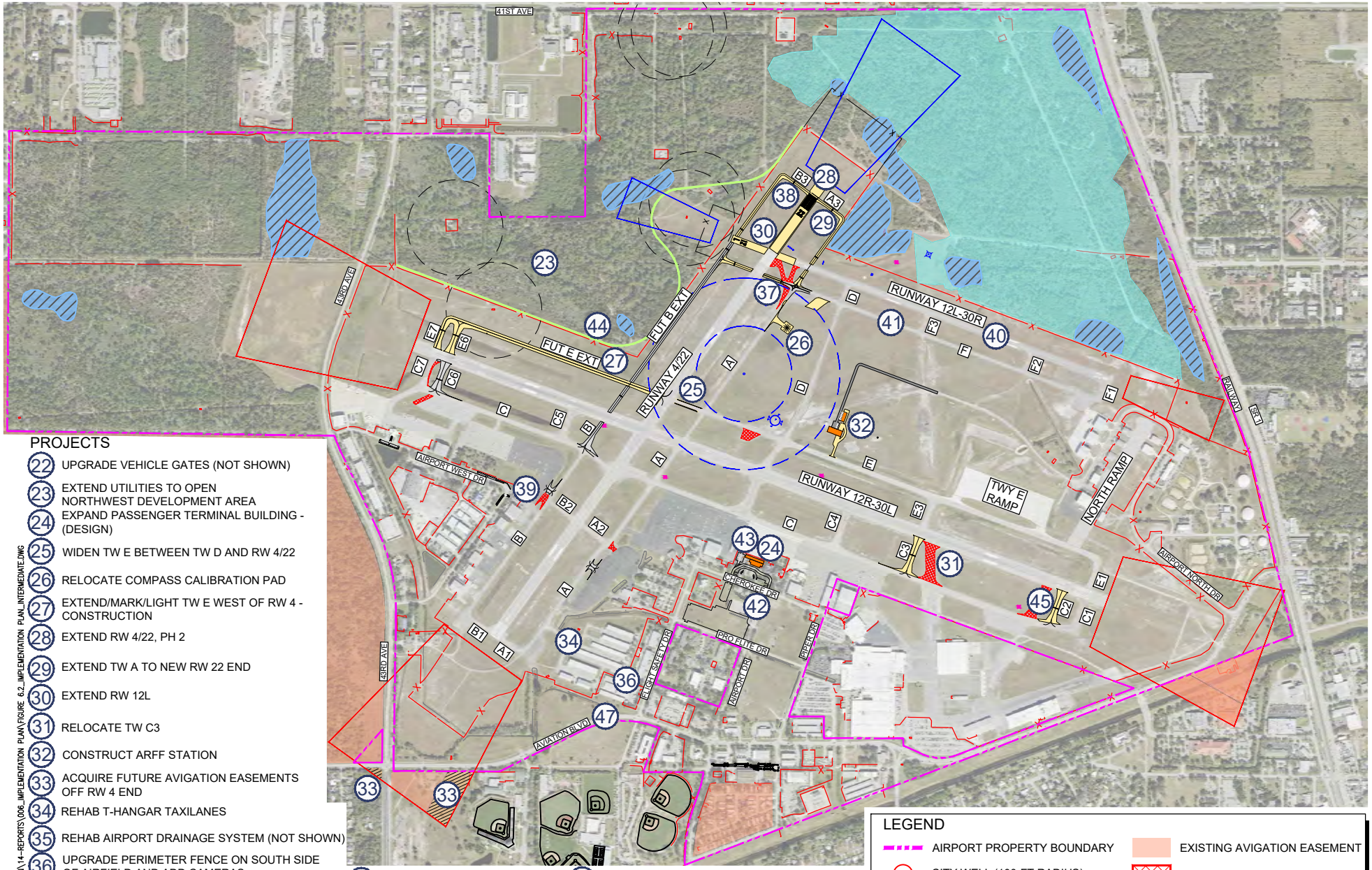
Extend Runway 4/22 and Runway 12L/30R

The extension of the ends of runways 22 and 12L at VRB improves the margin of safety for the runway and taxiway systems. The RSAs off the ends of runways 22 and 12L overlap. Per the latest FAA standards, overlapping RSAs should be avoided. Only extending the Runway 22 end will not resolve the overlapping RSAs. Reducing the length of Runway 12L/30R would add unacceptable limitations to flight training operations. Therefore, extending both runway ends is necessary to improve the overlapping RSAs. In addition to eliminating the overlapping RSAs, extending Runway 22 would help reduce operational constraints on Runway 4/22 due to runway length. The environmental documentation process for this project is the first step. As part of extending the runways, the parallel taxiways would also be extended. This would allow the taxiways to have 90-degree connectors at the end, eliminating the angled taxiway providing access to the Runway 22 end.

TABLE 6.3: INTERMEDIATE-TERM CAPITAL IMPROVEMENT PROJECTS

#	Project	Sponsor Year	Federal	State	Local	Total
Intermediate-Term (6–10 Years) (2029–33)						
22	Upgrade Vehicle Gates	2029	$1,020,000	$ 60,000	$60,000	$1,140,000
23	Extend Utilities to Open Northwest Development Area	2029	$1,000,000	$60,000	$60,000	$1,120,000
24	Expand Passenger Terminal Building (Design)	2029	$456,000	$10,000	$10,000	$476,000
25	Widen Taxiway E Between Taxiway D and Runway 4/22	2029	$270,000	$20,000	$20,000	$310,000
26	Relocate Compass Calibration Pad	2029	-	$480,000	$120,000	$600,000
27	Extend/Mark/Light Taxiway E West of Runway 4 – Construction	2029	$4,090,000	$230,000	$230,000	$4,550,000
		Yearly Total 2029	**$6,836,000**	**$860,000**	**$500,000**	**$8,196,000**
28	Extend Runway 4/22, Phase 2	2030	$4,220,000	$230,000	$230,000	$4,680,000
29	Extend Taxiway A to New Runway 22 End	2030	$1,860,000	$100,000	$100,000	$2,060,000
30	Extend Runway 12L	2030	$1,640,000	$ 90,000	$90,000	$1,820,000
31	Relocate Taxiway C3	2030	$1,125,000	$ 62,500	$62,500	$1,250,000
32	Construct ARFF Station	2030	$3,600,000	$200,000	$200,000	$4,000,000
33	Acquire Avigation Easements Off Runway 4 End	2030	$530,000	$30,000	$30,000	$590,000
Yearly Total 2030			**$12,975,000**	**$712,500**	**$712,500**	**$14,400,000**
34	Rehabilitate T-Hangar Taxilanes	2031	$2,570,000	$140,000	$140,000	$2,850,000
35	Rehabilitate Airport Drainage System	2031	$1,900,000	$50,000	$50,000	$2,000,000
36	Upgrade Perimeter Fence on South Side of Airfield and Add Cameras	2031	$880,000	$50,000	$50,000	$980,000
37	Extend Taxiway F to New Runway 12L End	2031	$890,000	$50,000	$50,000	$990,000
38	Extend Taxiway B to New Runway 22 End	2031	$1,930,000	$ 110,000	$110,000	$2,150,000
39	Construct Parking Along Airport West Drive	2031	-	$255,000	$255,000	$510,000
		Yearly Total 2031	**$8,170,000**	**$6550,000**	**$655,000**	**$9,480,000**
40	Rehabilitate Runway 12L/30R	2032	$5,400,000	$300,000	$300,000	$6,000,000
41	Rehabilitate Taxiway F	2032	$3,990,000	$230,000	$230,000	$4,450,000
42	Rehabilitate Existing Terminal Parking Lot	2032	-	$690,000	$170,000	$860,000
		Yearly Total 2032	**$9,390,000**	**$1,220,000**	**$700,000**	**$11,310,000**
43	Expand passenger Terminal Building (Construction)	2033	$2,732,400	$150,000	$150,000	$3,032,400
44	Extend Perimeter Airport Service Road – West Wide	2033	-	$1,570,000	$390,000	$1,960,000
45	Relocate Taxiway C2	2033	$1,020,000	$60,000	$60,000	$1,140,000
46	Upgrade Electrical – Convert High-Mast Lighting to LED	2033	$410,000	$20,000	$20,000	$450,000
47	Improve Airport Boulevard – 43rd Avenue to Airport Drive	2033	-	$ 2,580,000	$640,000	$3,220,000
48	Improve Airport Business Park	2033	-	$250,000	$250,000	$500,000
		Yearly Total 2033	**$4,162,400**	**$4,630,000**	**$1,510,000**	**$10,302,400**

Source: Hanson Professional Services Inc., 2024.



PROJECTS

22 UPGRADE VEHICLE GATES (NOT SHOWN)
23 EXTEND UTILITIES TO OPEN NORTHWEST DEVELOPMENT AREA
24 EXPAND PASSENGER TERMINAL BUILDING - (DESIGN)
25 WIDEN TW E BETWEEN TW D AND RW 4/22
26 RELOCATE COMPASS CALIBRATION PAD
27 EXTEND/MARK/LIGHT TW E WEST OF RW 4 - CONSTRUCTION
28 EXTEND RW 4/22, PH 2
29 EXTEND TW A TO NEW RW 22 END
30 EXTEND RW 12L
31 RELOCATE TW C3
32 CONSTRUCT ARFF STATION
33 ACQUIRE FUTURE AVIGATION EASEMENTS OFF RW 4 END
34 REHAB T-HANGAR TAXILANES
35 REHAB AIRPORT DRAINAGE SYSTEM (NOT SHOWN)
36 UPGRADE PERIMETER FENCE ON SOUTH SIDE OF AIRFIELD AND ADD CAMERAS
37 EXTEND TW F TO NEW RW 12L END
38 EXTEND TW B TO NEW RW 22 END
39 CONSTRUCT PARKING ALONG AIRPORT WEST RD.
40 REHAB RW 12L/30R
41 REHAB TW F
42 REHAB EXISTING PARKING LOT
43 EXPAND PASSENGER TERMINAL BUILDING - CONSTRUCTION
44 EXTEND PERIMETER AIRPORT SERVICE ROAD - WEST SIDE
45 RELOCATE TW C2
46 CONVERT HIGH MAST LIGHTING TO LED (NOT SHOWN)
47 IMPROVE AIRPORT BLVD - 43RD AVE TO AIRPORT DR.
48 CONSTRUCT AIRPORT BUSINESS PARK IMPROVEMENTS (NOT SHOWN)

LEGEND

- AIRPORT PROPERTY BOUNDARY
- CITY WELL (100-FT RADIUS)
- WETLANDS
- WATER RECHARGE AREA
- RUNWAY PROTECTION ZONE (RPZ)
- FUTURE RUNWAY PROTECTION ZONE (RPZ)
- EXISTING AVIGATION EASEMENT
- PAVEMENT TO BE REMOVED
- FUTURE AVIGATION EASEMENT
- FUTURE AIRFIELD PAVEMENT
- FUTURE LANDSIDE PAVEMENT
- PERIMETER AIRPORT SERVICE ROAD

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

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GRAPHIC SCALE IN FEET

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VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

IMPLEMENTATION PLAN INTERMEDIATE-TERM IMPROVEMENTS

DRAWN BY: JA
CHECKED BY: SZ

FIGURE 6.2

Other Airfield Improvements

The program to extend Runway 4/22 and Runway 12L/30R will be integrated into the capital improvement program while maintaining the existing airfield infrastructure. In the intermediate term, it is anticipated that the north parallel runway, Runway 12L/30R, and its parallel Taxiway F will be due for rehabilitation.

The FAA recommends that an airport hold a property interest within the RPZ. The approach to Runway 4 has been improved to provide lower instrument approach minimums since the avigation easement was acquired to protect the off-airport portion of the Runway 4 RPZ. To protect the current Runway 4 RPZ, it is recommended that the city acquire an easement over the balance of the RPZ. In addition, it is recommended that the city acquire the rights to remove the structure used for storage to avoid a higher congregation of people using a structure within the RPZ.

Airside Improvements

Upgrading the perimeter fence and adding security cameras will enhance the access control at VRB. The perimeter fence on the north side has already been upgraded, and this project will complete perimeter fence improvements. Extending the perimeter airport service road inside the fence enhances the ability to inspect and maintain the perimeter fence. Also, providing better access around the airfield inside the perimeter fence will reduce the number of entries and exits from the airfield. Where applicable, the airport service road will be included with associated projects. It may also initially be constructed with millings from airfield pavement rehabilitations, thereby repurposing the otherwise wasted product and lowering overall construction costs.

To open the northwest area for development, landside and airside access and utilities will need to be extended to the area. The airside access will come from the extension of taxiways E and B. The connections to these taxiways are anticipated to be constructed as part of the private hangar development. Landside access can be provided from 43rd Avenue and developed as part of the hangar construction. A water line extension is planned across the airfield to serve development west of the airport. This line would also serve the northwest development area. As part of the northwest development plan, areas have been reserved for stormwater management.

As part of maintaining and upgrading the airport facilities, the T-hangar taxilanes will be rehabilitated at the end of their useful life, which is anticipated to occur in the intermediate term. Also, the high-mast lighting will be converted to LED, increasing its efficiency. The airport operations facility is at maximum capacity. An area to expand this facility on the north side of the airport is planned to provide a facility closer to growing facilities on the airport.

The compass calibration pad is within the Taxiway E TOFA and Runway 12R/30L ROFA. When the pad is occupied and an aircraft is within this area, operations on Taxiway E can be restricted. To eliminate this restriction, it is proposed that the compass calibration pad along Taxiway D be relocated with appropriate setbacks. This proposed area cannot support hangar development due to height restrictions and is located away from potential magnetic interference.

New ARFF Station

VRB provides ARFF Index B service based on the size and average daily departure of the largest aircraft, the Airbus A220-300. The length of the Airbus A220-300 is just within the ARFF Index C-size aircraft. However, with fewer than five daily departures, the next-lower ARFF Index, Index B, applies. If activity at VRB increases to an average of five daily departures with the A220-300 or other Index C aircraft, VRB will need to provide ARFF Index C service. ARFF Index C requires a larger ARFF truck or two trucks that carry 3,000 gallons of water, up from 1,500 gallons. Larger or additional vehicles will not fit within the existing ARFF station. Therefore, space has been reserved for the development of a new station that can accommodate ARFF Index C equipment.

Landside Improvements

It is anticipated that by the intermediate term, the parking lots will need to be rehabilitated. The city plans to add additional lanes to Airport Boulevard to preserve the road's level of service with increasing traffic. The portion of Airport Boulevard from 43rd Avenue to Airport Drive passes through the Runway 4 RPZ. The FAA requires the airport to maintain ownership of the right of way. Therefore, the airport will need to participate in the Airport Boulevard improvements. The Airport Boulevard improvements are anticipated to add a travel lane in each direction, as well as turn lanes. Additional business park improvements are planned for the intermediate term to maintain and expand the nonaeronautical areas that provide important revenue for airport operations.

There is a need for additional parking capacity for the tenants along Airport West Drive. Similar to the commercial area out the southside of VRB, parking within the Airport West Drive right of way is proposed. With the other capital projects, it is anticipated that this additional parking could most likely be developed in the intermediate term.

Long-Term Capital Improvement Program

The proposed improvements at VRB during the long-term planning horizon of 2034 through 2043 are listed in **Table 6.4** and shown on **Figure 6.3**. Although there are a few airfield improvement projects, a majority of the proposed projects are airport roadway improvements, because they will require rehabilitation in this time frame. Because the exact timing of each of these projects is less defined, the long-term projects are grouped together with timing and priority to be refined closer to the project implementation. It has been assumed that by the long-term, VRB will likely exceed 100,000 passenger boardings per year, so for the long-term projects, the state share of state-local projects has been reduced to 50%.

TABLE 6.4: LONG-TERM CAPITAL IMPROVEMENT PROJECTS

#	Project	Federal	State	Local	Total
Long-Term (10-Plus Years) (2034–43)					
49	Construct Additional Airport Operations Facility	-	$1,510,000	$1,510,000	$3,020,000
50	Acquire ARFF Vehicle	-	$850,000	$850,000	$1,700,000
51	Improve Airport Boulevard – 27th Avenue to 27th Street	-	-	$1,430,000	$2,860,000
52	Improve Airport Boulevard – 27th Street to SR 1	-	$1,290,000	$1,290,000	$ 2,580,000
53	Rehabilitate Runway 4/22	$12,400,000	$690,000	$690,000	$13,780,000
54	Realign Taxiway C and Rehabilitate Taxiway C West of Runway 4	$13,110,000	$730,000	$730,000	$14,570,000
55	Construct Taxiway E2 Connector	$1,000,000	$60,000	$ 60,000	$1,120,000
56	Taxiway A Partial Realignment	$3,740,000	$210,000	$210,000	$4,160,000
57	Relocate 43rd Avenue	-	$1,540,000	$1,540,000	$3,080,000
58	Install MALSR on Runway 12R	$1,910,000	$110,000	$110,000	$2,130,000
59	Realign Runway 4 Swale and Perimeter Fence	$1,170,000	$70,000	$70,000	$1,310,000
60	Extend Roads and Utilities to Open West Nonaeronautical Development	-	$ 2,400,000	$ 2,400,000	$4,800,000
61	Relocate Airport Service Road Around 30L (North Side)	-	-	$280,000	$560,000
62	Extend Perimeter Airport Service Road – North Side	-	-	$2,140,000	$4,280,000
63	Upgrade Electrical Vault	-	$730,000	$730,000	$1,460,000
64	Rehabilitate Midfield Service Road	-	$1,020,000	$1,020,000	$2,040,000
65	Rehabilitate Airport West Drive	-	$710,000	$710,000	$1,420,000
66	Rehabilitate Airport North Drive	-	$740,000	$740,000	$1,480,000
67	Rehabilitate Cherokee Drive	-	$280,000	$280,000	$560,000
68	Rehabilitate Flight Safety Drive	-	$330,000	$330,000	$660,000
69	Rehabilitate Pro Flight Drive	-	$280,000	$280,000	$560,000
70	Rehabilitate Piper Drive	-	$450,000	$450,000	$900,000
71	Improve Airport Business Park	-	$ 250,000	$250,000	$900,000
	Total for 2034-2043	**$33,330,000**	**$18,100,000**	**$18,100,000**	**$69,530,000**

Source: Hanson Professional Services Inc., 2024.

Safety and Security

Based on the age of the ARFF vehicles, it is anticipated a replacement ARFF vehicle will be needed in the long term. This vehicle may also be needed to meet a higher ARFF Index based on the number of average daily departures of the largest aircraft operating at VRB.

Airfield Improvements

The long-term airfield improvements focus on eliminating the need to use declared distances at VRB. To provide a full 1,000-foot RSA and ROFA beyond the pavement end of Runway 4, the swale and perimeter fence beyond the Runway 4 end will be realigned outside the ROFA. This will result in the swale being outside the realigned perimeter fence to minimize wildlife attraction on the airfield. It is also anticipated that the pavement on Runway 4/22 will be at the end of its useful life and in need of rehabilitation.

To provide a full 1,000-foot RSA and ROFA beyond the pavement end of Runway 12R, 43rd Avenue will be relocated to the west. In addition to 43rd Avenue, a portion of the public sidewalk and airport perimeter fence will be relocated outside the ROFA. These relocations should account for a future airport perimeter road that will provide airport staff the ability to travel around the airfield while remaining outside the ROFA. A MALSR will be installed to serve Runway 12R to provide instrument approach minimums as low as 1/2-mile visibility, increasing the accessibility of VRB in poor weather conditions. The current approach minimums are 3/4-mile visibility.

It is anticipated that Taxiway C west of Runway 4 will be at the end of its useful life and in need of rehabilitation in the long term. This portion of Taxiway C has a runway -to-taxiway centerline separation of 400 feet, whereas Taxiway C east of Runway 4 has a separation of 475 feet. Therefore, to have the same runway-to-taxiway centerline separation the entire length of Taxiway C, there will be a 75-foot shift of Taxiway C east of Runway 4 in the long term. In addition to improving the FAA-defined hot spot where Taxiway C crosses Runway 4/22, realigning the taxiway will provide additional space for an apron area east of Runway 4/22. With growing activity on the north side of Runway 12R/30L, a bypass taxiway designated as E2 is proposed to be constructed from Taxiway E to Runway 30L.

Taxiway A has a 350-foot runway -to-taxiway centerline separation south of Taxiway C, which meets ADG-II standards. The balance of Taxiway A has a 400-foot separation, which meets ADG-III standards. If ADG- III standards are needed for the full length of Taxiway A, the recommended development includes realigning Taxiway A in the long term.

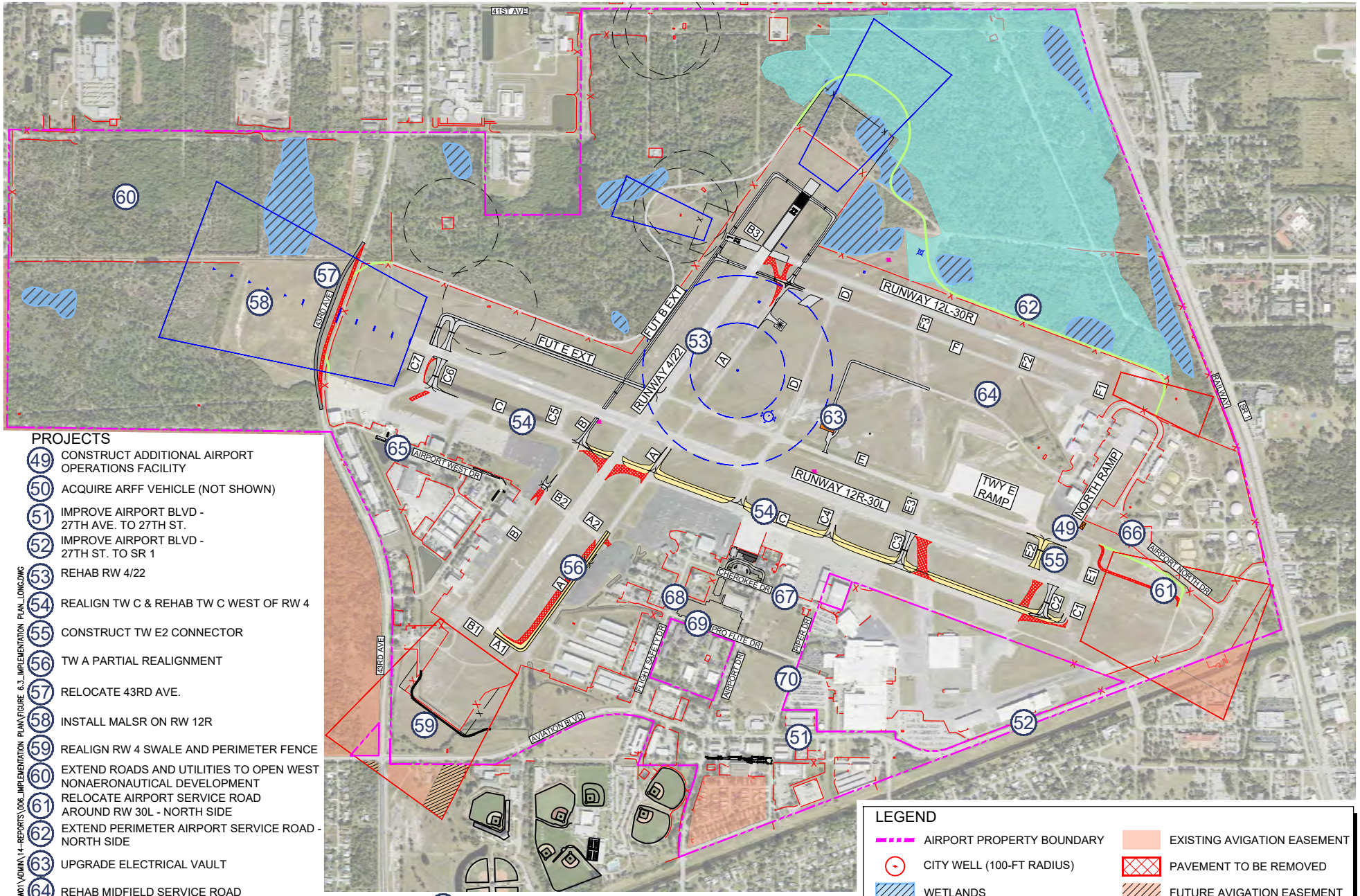
Airside Improvements

The airport perimeter service road around Runway 30L is within the ROFA. Operational procedures are in place for vehicles to hold when the runway is active. To remove this restriction, the airport service road will be relocated outside the ROFA in the long term. The airport perimeter road extension started in the immediate term will be continued on the north side of the airport in the long term.

Based on the age of the equipment in the electrical vault, it is anticipated to reach the end of its useful life in the long term. Therefore, an electrical vault upgrade project is planned in the long term.

Landside Improvements

Additional business park improvements are planned for the long term. These improvements are anticipated to continue to open the airport area west of 43rd Avenue for development. Another business park improvement project is planned in the long term to maintain the nonaeronautical areas on VRB. The improvements on Airport Boulevard will continue in the long term. They have been divided into three phases, with the first phase in the intermediate term and the other two phases in the long term. Other roads on VRB that are the airport's responsibility are anticipated to reach the end of their useful life in the long term and have been included for rehabilitation. Their rehabilitation will be phased during the long term, based on their condition.



PROJECTS

- 49 CONSTRUCT ADDITIONAL AIRPORT OPERATIONS FACILITY
- 50 ACQUIRE ARFF VEHICLE (NOT SHOWN)
- 51 IMPROVE AIRPORT BLVD - 27TH AVE. TO 27TH ST.
- 52 IMPROVE AIRPORT BLVD - 27TH ST. TO SR 1
- 53 REHAB RW 4/22
- 54 REALIGN TW C & REHAB TW C WEST OF RW 4
- 55 CONSTRUCT TW E2 CONNECTOR
- 56 TW A PARTIAL REALIGNMENT
- 57 RELOCATE 43RD AVE.
- 58 INSTALL MALSR ON RW 12R
- 59 REALIGN RW 4 SWALE AND PERIMETER FENCE
- 60 EXTEND ROADS AND UTILITIES TO OPEN WEST NONAERONAUTICAL DEVELOPMENT
- 61 RELOCATE AIRPORT SERVICE ROAD AROUND RW 30L - NORTH SIDE
- 62 EXTEND PERIMETER AIRPORT SERVICE ROAD - NORTH SIDE
- 63 UPGRADE ELECTRICAL VAULT
- 64 REHAB MIDFIELD SERVICE ROAD
- 65 REHAB AIRPORT WEST DR.
- 66 REHAB AIRPORT NORTH DR.
- 67 REHAB CHEROKEE DR.
- 68 REHAB FLIGHT SAFETY DR.
- 69 REHAB PRO FLIGHT DR.
- 70 REHAB PIPER DR.
- 71 AIRPORT BUSINESS PARK IMPROVEMENTS (NOT SHOWN)

LEGEND

- AIRPORT PROPERTY BOUNDARY
- CITY WELL (100-FT RADIUS)
- WETLANDS
- WATER RECHARGE AREA
- RUNWAY PROTECTION ZONE (RPZ)
- FUTURE RUNWAY PROTECTION ZONE (RPZ)
- EXISTING AVIGATION EASEMENT
- PAVEMENT TO BE REMOVED
- FUTURE AVIGATION EASEMENT
- FUTURE AIRFIELD PAVEMENT
- FUTURE LANDSIDE PAVEMENT
- PERIMETER AIRPORT SERVICE ROAD

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Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

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\\HANSONLDOMAIN\GIS\DRIVE\20J0085\20A0069W01\ADMIN\14-REPORTS\006_IMPLEMENTATION PLAN\FIGURE 6.3_IMPLEMENTATION PLAN_LONG.DWG

VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

IMPLEMENTATION PLAN LONG-TERM IMPROVEMENTS

DRAWN BY: JA
CHECKED BY: SZ

FIGURE 6.3

6.5. Cash Flow Financial Analysis

The capital improvements identified through the master plan are just one part of the overall airport budget. VRB's financial structure has been reviewed to determine the composition of the airport's revenue sources and operational expenses to identify the cash flow that could be available to support the capital improvement program.

VRB has a policy in place for leasing and rates and charges to meet the obligations through the FAA grant assurances of being as self-sufficient as possible and economic nondiscrimination. The use of these policies also helps VRB to maximize the airport's revenue to offset airport expenses.

A projected pro forma cash flow analysis was prepared for the 20-year planning period. It considers airport revenue, operating and maintenance expenses, existing and new debt service requirements and other nonoperating revenue and expenses. A range of potential revenue resources have been considered and refined through the airport's annual budgeting process. Projected increases in revenue generation through new development and lease adjustments have been taken into consideration.

To develop the pro forma, previous fiscal year budgets were reviewed. The first year of the pro forma is based on the VRB budget. Through coordination with VRB staff, anticipated/scheduled increases in income and expenses were identified, especially significant changes. These changes were incorporated into the pro forma and then reviewed with the VRB staff.

The VRB annual budget information, along with the project changes, was used to develop the annual income projections for the 20-year period. Annual percentage increases to income line items for each fiscal year were based on anticipated changes in the inflation rate. A similar approach was used for the annual expense line items. The projected annual income and projected annual operating expenses were used to calculate the net operating income. The overall pro forma was also reviewed with VRB staff.

The airport uses a construction fund to support the local capital project costs. The funds needed for projects are then transferred from the fund to be available for the projects.

Because the long-term capital projects have not been assigned a project year, an average over the 10 years has been applied to each year.

TABLE 6.5: VRB PROJECTED CASH FLOW PRO FORMA

	2024/25	2025/26	2026/27	2027/28	2028/29
INCOME					
Operating Revenue	**$5,756,065**	$5,926,323	$6,131,813	$6,399,177	$6,665,117
TOTAL INCOME	**$5,756,065**	**$5,926,323**	**$6,131,813**	**$6,399,177**	**$6,665,117**
EXPENSES					
Personnel Costs	**$1,490,292**	$1,533,348	$1,577,653	$1,623,243	$1,675,008
Operating Expenses	**$2,812,958**	$3,308,547	$4,237,350	$4,355,405	$4,489,450
TOTAL EXPENSES	**$4,303,250**	**$4,841,895**	**$5,815,003**	**$5,978,648**	**$6,164,458**
NET OPERATING INCOME	**$1,452,815**	**$1,084,428**	**$316,809**	**$420,529**	**$500,659**
Non-Operating Expenses					
Capital Outlay	**$1,127,211**	$1,384,760	$896,000	$200,000	$90,000
Debt Service and Transfers	**$450,000**	$0	$0	$0	$0
Depreciation	**$0**	$0	$0	$0	$0
Total Non-Operating Expenses	**$1,577,211**	**$1,384,760**	**$896,000**	**$200,000**	**$90,000**
TOTAL ALL EXPENSES	**$5,880,461**	**$6,226,655**	**$6,711,003**	**$6,178,648**	**$6,254,458**
CASH FLOW BEFORE TAXES	**(124,396)**	**(300,332)**	**(579,191)**	**220,529**	**410,659**

	2029/30	2030/31	2031/32	2032/33	2033/34
INCOME					
Operating Revenue	$6,868,857	$7,079,427	$7,297,059	$7,539,078	$7,789,817
TOTAL INCOME	**$6,868,857**	**$7,079,427**	**$7,297,059**	**$7,539,078**	**$7,789,817**
EXPENSES					
Personnel Costs	$1,728,429	$1,783,560	$1,840,455	$1,899,171	$1,965,446
Operating Expenses	$4,627,784	$4,770,545	$4,917,875	$5,069,919	$5,241,538
TOTAL EXPENSES	**$6,356,214**	**$6,554,106**	**$6,758,330**	**$6,969,090**	**$7,206,985**
NET OPERATING INCOME	**$512,643**	**$525,322**	**$538,729**	**$569,988**	**$582,833**
Non-Operating Expenses					
Capital Outlay	$500,000	$712,500	$655,000	$700,000	$1,810,000
Debt Service and Transfers	$0	$0	$0	$0	$0
Depreciation	$0	$0	$0	$0	$0
Total Non-Operating Expenses	**$500,000**	**$712,500**	**$655,000**	**$700,000**	**$1,810,000**
TOTAL ALL EXPENSES	**$6,856,214**	**$7,266,606**	**$7,413,330**	**$7,669,090**	**$9,016,985**
CASH FLOW BEFORE TAXES	**12,643**	**(187,178)**	**(116,271)**	**(130,012)**	**(1,227,167)**

	2034/35	2035/36	2036/37	2037/38	2038/39
INCOME					
Operating Revenue	$8,049,596	$8,318,743	$8,597,600	$8,886,521	$9,185,873
TOTAL INCOME	**$8,049,596**	**$8,318,743**	**$8,597,600**	**$8,886,521**	**$9,185,873**
EXPENSES					
Personnel Costs	$2,034,041	$2,105,037	$2,178,518	$2,254,570	$2,337,783
Operating Expenses	$5,419,165	$5,603,008	$5,793,286	$5,990,223	$6,205,701
TOTAL EXPENSES	**$7,453,206**	**$7,708,045**	**$7,971,804**	**$8,244,793**	**$8,543,484**
NET OPERATING INCOME	**$596,390**	**$610,698**	**$625,797**	**$641,728**	**$642,390**
Non-Operating Expenses					
Capital Outlay	$1,810,000	$1,810,000	$1,810,000	$1,810,000	$1,810,000
Debt Service and Transfers	$0	$0	$0	$0	$0
Depreciation	$0	$0	$0	$0	$0
Total Non-Operating Expenses	**$1,810,000**	**$1,810,000**	**$1,810,000**	**$1,810,000**	**$1,810,000**
TOTAL ALL EXPENSES	**$9,263,206**	**$9,518,045**	**$9,781,804**	**$10,054,793**	**$10,353,484**
CASH FLOW BEFORE TAXES	**(1,213,610)**	**(1,199,302)**	**(1,184,203)**	**(1,168,272)**	**(1,167,610)**

	2039/40	2040/41	2041/42	2042/43	2043/44
INCOME					
Operating Revenue	$9,496,036	$9,817,405	$10,150,388	$10,495,409	$10,852,908
TOTAL INCOME	**$9,496,036**	**$9,817,405**	**$10,150,388**	**$10,495,409**	**$10,852,908**
EXPENSES					
Personnel Costs	$2,424,074	$2,513,558	$2,606,352	$2,702,581	$2,802,369
Operating Expenses	$6,429,151	$6,660,869	$6,901,161	$7,150,344	$7,408,746
TOTAL EXPENSES	**$8,853,225**	**$9,174,427**	**$9,507,514**	**$9,852,924**	**$10,211,115**
NET OPERATING INCOME	**$642,811**	**$642,978**	**$642,874**	**$642,485**	**$641,793**
Non-Operating Expenses					
Capital Outlay	$1,810,000	$1,810,000	$1,810,000	$1,810,000	$1,810,000
Debt Service and Transfers	$0	$0	$0	$0	$0
Depreciation	$0	$0	$0	$0	$0
Total Non-Operating Expenses	**$1,810,000**	**$1,810,000**	**$1,810,000**	**$1,810,000**	**$1,810,000**
TOTAL ALL EXPENSES	**$10,663,225**	**$10,984,427**	**$11,317,514**	**$11,662,924**	**$12,021,115**
CASH FLOW BEFORE TAXES	**(1,167,189)**	**(1,167,022)**	**(1,167,126)**	**(1,167,515)**	**(1,168,207)**

Source: Hanson Professional Services Inc., 2024.

The implementation of improvements included in this chapter was developed using the historical capital improvement plan, and the facility improvements were identified in this airport master plan. The overall projected cash flow pro forma indicates a positive cash flow for net operating income. However, when applying nonoperating expenses to include capital outlay, a negative cash flow exists for several years, particularly in the long-term if the state share of state-local programs drops to 50% because VRB exceeds 100,000 annual passenger boardings.

This means that additional revenue sources or grant funds will need to be pursued to support the program on the projected schedule, or projects will need to be delayed to align with available funding. The potential revenues were based on the forecast activity. If activity increases, there should be some additional revenue generation. Other items VRB can consider to generate revenue, especially with higher passenger enplanement levels, are to establish a PFC program or institute paid parking operations. Both activities have a cost to establish and/or operate, so the benefit and costs need to be weighed before implementation. The airport also continues to pursue aeronautical and nonaeronautical development. Development that is in process has been included in the pro forma, but other development unknown at this time could also assist in generating additional revenue to support future airport development.

6.6. Facility Implementation Process

While the master plan identifies 20 years of development, the focus for implementation is on the projects in the next five-year period. VRB staff maintain a five-year capital improvement program in the JACIP. As projects receive grant funding, new projects are entered into the five-year plan. The start of this process is annual meetings between VRB and FDOT district staff in November or December each year. Before this meeting, VRB needs to review the projects in their plan to make sure the scope of work and estimate are accurate. Also, the projects desired to be funded and the source of funding (federal or state) need to be identified before the meeting. Projects with only local funding do not need to be included in the JACIP, because funding assistance is not being requested. As part of this planning, VRB must be sure that its local share for the requested grant funded projects will be available. VRB must be able to document the justification for a project to be implemented. Including a project in the ALP does not establish justification. Considering the priority with the FAA and FDOT system is part of establishing a justification for funding.

VRB staff meet with city staff in June and July to establish the budget for the airport for the next fiscal year. The funding for capital projects over the next five years is part of this budget planning to ensure the local share for the requested project will be available.

After the FDOT/airport meeting, VRB should prepare a summary of the changes they plan to make in the JACIP and submit it to FDOT. After the planned changes are submitted, the JACIP is opened for VRB to make changes. This is the only time that VRB can make changes to projects already in the JACIP. However, new projects may be entered when the JACIP is locked for changes to existing projects in the program. When the JACIP is open for changes, an airport needs need review and update project cost estimates and review the projects to make sure they are included in its current capital plan. Any changes needed to reflect discussions and decisions in the budgeting process also need to be addressed in the JACIP. The project narratives should also be reviewed to make sure they are current and complete.

In March and April, FDOT reviews the information in the JACIP and identifies the projects that will receive funding in the upcoming fiscal year. The recommended projects from each district are then coordinated into the tentative work program, which is adopted July 1 each year (with the start of the Florida state fiscal year). In September and October, requests for current fiscal year grants are submitted to the district aviation coordinator. These are for projects that are programmed in the work program.

In addition to entering a project in the JACIP, VRB needs to make sure a project is ready for implementation. A key item to prepare a project is to make sure it has airspace approval. This is typically established by including the project on the ALP. If it is not included, a red-line ALP update is needed to add the project. Even if a project is included on the ALP, a more detailed airspace review may be needed as part of the design process, if it is within the filing requirements of 14 CFR Part 77.

FDOT uses a continuous system planning process known as Continuing Florida Aviation System Planning Process (CFASPP). This process uses three annual meetings plus automated communications. It is important for VRB to attend CFASPP meetings to stay abreast of key dates and any updates to state programs.

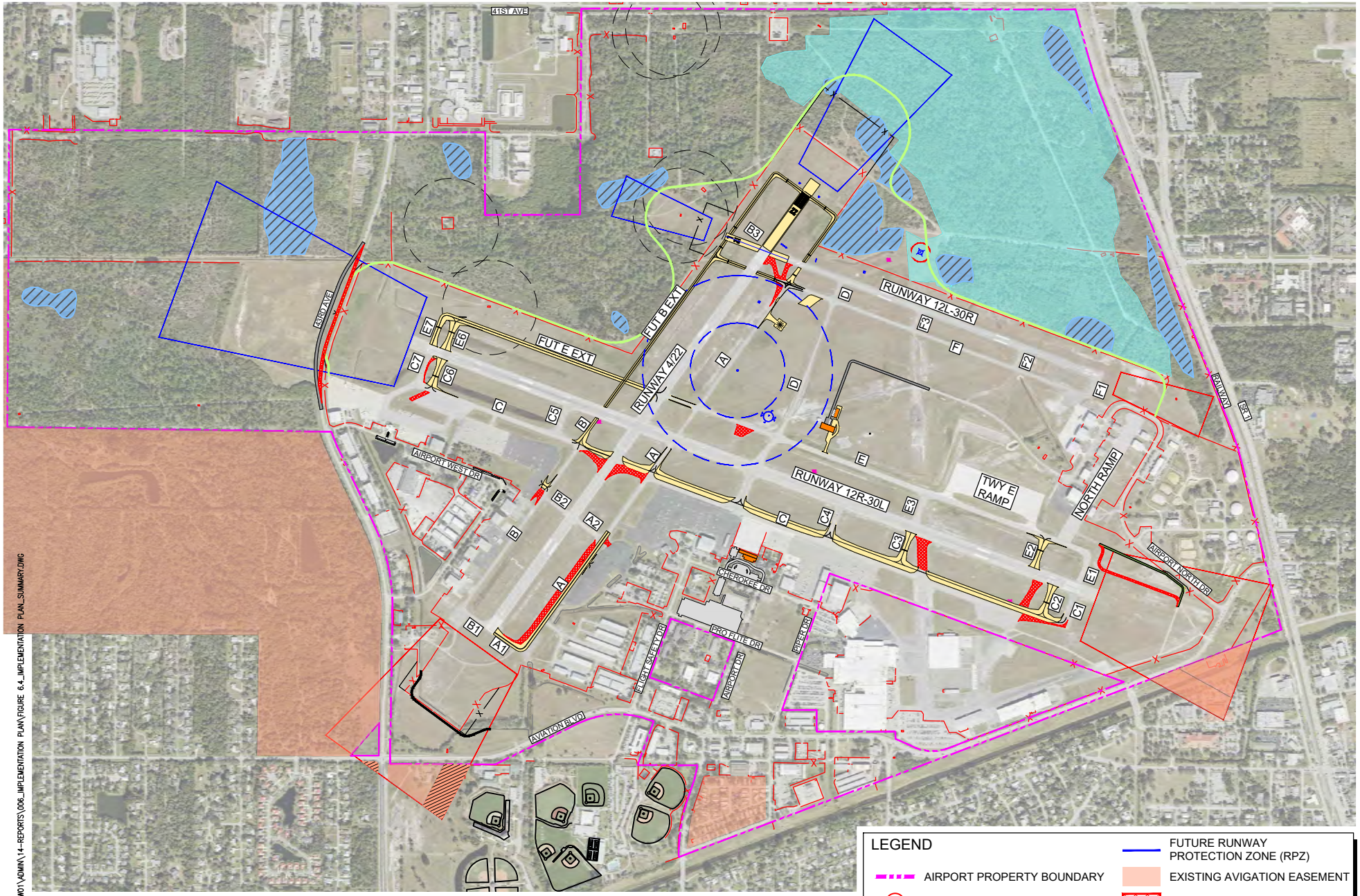
Environmental review is also an important step. The level of environmental review will vary based on the funding source. Also, the FAA Authorization Act of 2024 included new language intended to streamline the environmental review. For other funding sources, national resource laws need to be met. Projects involving the potable water and sewer must be permitted by the FDEP. Any new development at VRB also needs to comply with the city of Vero Beach, Indian River Farms Water Control District and SJRWMD stormwater requirements. The ALP prepared as part of the master plan reserves areas to address stormwater requirements. Also, a stormwater master plan is ongoing at the time of this master plan to further address stormwater requirements.

The VRB staff work closely with the city planning department to ensure that city requirements are met for development projects, as applicable. These standards are typically applicable to new development. This review process starts with the review of the ALP before it is submitted for FAA and FDOT review and approval. Specific requirements are addressed on a project-by-project basis.

When a project receives grant funding from the state of Florida, it is essential that the Public Transportation Grant Agreement is in place before incurring costs so that they are eligible for reimbursement. The receipt of the grant and the start of the project should be coordinated so that airport is ready to begin work, receive invoices from the entity performing the work and start invoicing for the grant funds. The VRB staff manages the project during its implementation.

6.7. Summary

This capital improvement plan is intended to be flexible to meet user needs, take advantage of additional funding opportunities and align the available local share. Therefore, as the annual CIP submittal is prepared, the implementation plan should be reviewed and adjusted, as needed, in response to any changing demands and changing revenue resources. **Figure 6.4** depicts the combined overall new development recommended in the master plan.



LEGEND

- AIRPORT PROPERTY BOUNDARY
- CITY WELL (100-FT RADIUS)
- WETLANDS
- WATER RECHARGE AREA
- RUNWAY PROTECTION ZONE (RPZ)
- FUTURE RUNWAY PROTECTION ZONE (RPZ)
- EXISTING AVIGATION EASEMENT
- PAVEMENT TO BE REMOVED
- FUTURE AVIGATION EASEMENT
- FUTURE AIRFIELD PAVEMENT
- FUTURE LANDSIDE PAVEMENT

Source: Airport Property Boundary, Vero Beach Department of Public Works Survey Division, September 2021; Aerial Photography, NV5 GeoSpatial, 2023.

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VERO BEACH REGIONAL AIRPORT | HANSON

VERO BEACH REGIONAL AIRPORT MASTER PLAN

IMPLEMENTATION PLAN SUMMARY OF IMPROVEMENTS

DRAWN BY: JA

CHECKED BY: SZ

FIGURE 6.4

7. Airport Layout Plan

7.1. Introduction

This section presents information about the updated ALP drawing sheets for VRB. These drawings graphically present the existing and future facilities. The ALP serves three primary purposes:

- To preserve areas needed for intermediate and long-term facility development, showing the airport facility at the end of the planning period (20 years) and beyond.
- To review FAA design standards in detail to assure that appropriate clear areas are protected.
- To provide an opportunity for the various divisions of the FAA to review the set of drawings so development requirements of each branch are considered to ensure the proposed development does not adversely affect the safety, utility, and efficiency of the airport or surrounding airspace.

The FAA uses the approved ALP as the "plan on file" to protect the airspace when reviewing proposed development around the airport. As development is implemented, the airport sponsor should include an update to the ALP as part of the project to meet the FAA's grant assurance requirement of maintaining a current ALP.

The VRB ALP drawing set includes sheets that show the existing and proposed future facilities at the airport, as well as the airport within the surrounding community. A half-size set (11 by 17 inches) of the ALP set has been included for reference in **Appendix H**. The ALP includes:

- Cover Sheet
- Airport Data Sheets
- Existing Airport Layout Drawing
- Future Airport Layout Drawing
- Airport Airspace Drawing
- Airport Airspace Obstruction Data Tables
- Terminal Area Drawings
- Inner Portion of the Approach Surface Drawings
- Inner Portion of the Approach Surface Obstruction Data Tables
- Departure Surface Drawings
- Departure Surface Obstruction Data Tables
- Runway Centerline Profile Drawings
- Airport Land Use Drawing
- Airport Traffic Control Tower Line-of-Sight Sheet

In addition to the ALP set, an updated Exhibit 'A' Airport Property Map was completed as a separate document. A half-size set (11 by 17 inches) of the Exhibit 'A' Airport Property Map has been included for reference in **Appendix I**. The Exhibit 'A' Airport property Map set includes:

- Cover Sheet
- Exhibit 'A' Airport Property Map
- Exhibit 'A' Airport Property Map Parcel Data Sheets

The development of a future vertiport is shown on VRB Future Airport Layout Drawing With the ongoing development of industry guidance in the planning of vertiports and to assist in streamlining the FAA's review of the ALP set, a Vertiport Layout Plan set was prepared as a standalone document. A half-size set (11 by 17 inches) of the Vertiport Layout Plan set has been included for reference in **Appendix J.** The Vertiport Layout Plan set includes:

- Cover Sheet
- Vertiport Data Sheet
- Future Vertiport Layout Plan
- Future Vertiport Approach/Departure Surface Sheets
- Vertiport Obstruction Data Tables

7.2. Description of Sheets

Airport Layout Plan

Full-size drawings should be referred to when analyzing specific development issues. The following overviews the purpose of each drawing of the ALP set.

Cover Sheet: A sheet with airport name, date, location map, vicinity map, and approval-signature blocks. The ALP approval letter, once received from the FAA, is affixed to this sheet.

Airport Data Sheets: The data sheets that contain a summary of airport data, runway and approach data, taxiway data, and wind rose information.

Existing Airport Layout Drawing: A sheet depicting the current detailed information for VRB.

Future Airport Layout Drawing: A sheet that provides detailed information about the future development at VRB.

Airport Airspace Drawing: A drawing that shows obstacle identification surfaces for the ultimate development, as defined in *FAR Part 77: Objects Affecting Navigable Airspace*.

Airport Airspace Obstruction Data Table Sheets: Sheets identifying all objects evaluated for airspace surfaces that do not appear on one of the Inner Portion of Approach Surface Drawings and Obstruction Data Sheets.

Terminal Area Drawings: These drawings depicts the existing and proposed terminal area development for the multiple terminal and landside development areas on the airport. The development is shown at a larger scale than the future airport layout drawing. New taxilanes, hangar development, and other additional future projects are depicted.

Inner Portion of Approach Surface Drawings: Drawings containing the plan and profile views of the inner portion of the approach surface including FAR Part 77 approach surface, FAA AC 150/53000-13B, threshold siting and vertical guidance surface as applicable for Runways 12R/30L, 12L/30R and 4/22

Inner Portion of Approach Surface Obstruction Data Table Sheets: Sheets identifying all objects evaluated for Runways 12R/30L, 12L/30R and 4/22 for the FAR Part 77 approach surface, FAA AC 150/5300-13B threshold siting and vertical guidance surfaces.

Departure Surface Drawings: Drawings depicting the applicable departure surfaces for Runways 12R/30L, 12L/30R and 4/22 for instrument departures. While Runway 12L/30R does not have any instrument approaches, is could be used for an instrument departure, so it was included in the evaluation.

Runway Profile Drawings: Drawings depicting the runway centerline profile and the clear line-of-sight along the length of Runways 12R/30L, 12L/30R and 4/22.

Airport Land Use Drawing: A drawing showing the land uses on and around the airport.

Airport Traffic Control Tower Line-of-Sight Sheet: This drawing depicts the allowable height of development to maintain a clear line-of-sight from the airport traffic control tower to the movement areas where aircraft are under air traffic control service on VRB.

Exhibit "A" Property Map

The following sheets are part of the VRB Exhibit "A" Property Map.

Cover Sheet: A sheet with airport name, date, location map, vicinity map, and approval-signature blocks.

Exhibit "A" Airport Property Map: A drawing showing parcels of existing and future airport-owned land and easement prepared as the Exhibit 'A' property map

Exhibit "A" Airport Property Map Parcel Data: Multiple pages of data tables documenting airport owned land and easements, future proposed land and easement acquisition and property that was owned by the airport but has been released and sold.

Vertiport Layout Plan

The vertiport layout plan set of drawings is similar in content to the ALP, but it is focused only the vertiport.

Cover Sheet: A sheet with airport name, date, location map, vicinity map, and approval-signature blocks. The vertiport plan approval letter, once received from the FAA, is affixed to this sheet.

Vertiport Data Sheet: The data sheets that contain a summary of vertiport data.

Future Vertiport Layout Drawing: A sheet that provides detailed information about the future development of the vertiport. This sheet also includes line-of-sight contours from the airport traffic control tower.

Inner Portion of Approach Surface Drawings: Drawings containing the plan and profile views of the inner portion of the approach surfaces for planned west and south approaches.

Inner Portion of Approach Surface Obstruction Data Table Sheets: Sheets identifying all objects evaluated for the west and south approaches.

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APPENDIX A: ACRONYMS AND GLOSSARY

ACRONYMS, INITIALISMS AND ABBREVIATIONS

AAC aircraft approach category
AC advisory circular
AD airworthiness directive
ADG airplane design group
ADO Airports District Office
ADS-B automatic dependent surveillance–broadcast
AGL above ground level
AIM Aeronautical Information Manual
AIP Airport Improvement Program
ALP airport layout plan
ALS approach lighting system
AMP airport master plan
AP airport
APCH approach
APRC approach reference code
APRT airport
APT airport(s)
APV approach procedure with vertical guidance (for GPS approaches)
ARP airport reference point
ASDA accelerate-stop distance available
ASOS automated surface observing system
ATC air traffic control
ATCT airport traffic control tower
ATO Air Traffic Organization
AVGAS aviation gasoline
AWOS automated weather observing system
BCN beacon
BRL building restriction line
CatEx categorical exclusion
CFJ (KCFJ) Crawfordsville Regional Airport
CFR Code of Federal Regulations
CMG cockpit to main gear
CSPP construction safety and phasing plan
CTAF common traffic advisory frequency
DA decision altitude
dB decibel
DEP depart, departure
DME distance measuring equipment
DNL day-night average sound level
DW dual wheels
EA environmental assessment
EDDA environmental due diligence audit
EIS environmental impact statement
FAA Federal Aviation Administration
FARs Federal Aviation Regulations
FBO fixed-base operator
FLT/PLN flight plan
FOD foreign object damage (debris)
FONSI finding of no significant impact
FSDO Flight Standards District Office
FSS flight service station
GA general aviation
GIS geographic information system
GND ground level
GP glide path
GPS global positioning system
GQS glideslope qualification surface
GS glide slope indicator
HIRL high intensity runway lights
IAP instrument approach procedure
ICAO International Civil Aviation Organization
IFR instrument flight rules
ILS instrument landing system
INOP inoperative
LDA landing distance available
LED light-emitting diode
LNAV lateral navigation (for GPS approaches)
LOC localizer (part of an ILS system)
LPV localizer performance with vertical guidance (for GPS approaches)
MALS medium intensity approach lighting system
MALSF medium intensity approach lighting system with sequenced flashers
MALSR medium intensity approach lighting system with runway alignment indicator lights
MDA minimum descent altitude
METAR meteorological aviation routine weather report/actual report
MGW main gear width
MHz megahertz

MIL military
MIN minimum
MIRL medium intensity runway light
MOS modification to standards
MSL mean sea level
MTOW maximum takeoff weight
MVAR/MAGVAR magnetic variation
NAAQS National Ambient Air Quality Standards
NAS National Airspace System
navaid navigational aid
NDB nondirectional beacon
NEPA National Environmental Policy Act
NM nautical mile = 1.1508 statute miles
NOTAM notice to airmen
NPE nonprimary entitlement
NPIAS National Plan of Integrated Airport Systems
NTSB National Transportation Safety Board (U.S.)
NWS National Weather Service
OBST obstacle, obstruction
OCS obstacle clearance surface
OE/AAA Obstruction Evaluation/Airport Airspace Analysis
OFA object free area
OFZ obstacle free zone
OPS operations
OTS out of service
PA precision approach
PAPI precision approach path indicator
PAX passengers
PBN performance-based navigation
PCI pavement condition index
PCL pilot-controlled lighting
PMP pavement management program
RAIL runway alignment indicator lights
RDC runway design code
REILs runway end identifier lights
RMK remark(s)
RNAV area navigation (generic acronym for any device capable of aircraft guidance between pilot-defined waypoints)
RNP required navigation performance
ROD record of decision
RPZ runway protection zone
RSA runway safety area
RVR runway visual range
RW runway
RWY runway
SAWS stand-alone weather sensors
SIGWX significant weather
SMS safety management system
SOP standard operating procedures
SRE snow removal equipment
STOL short takeoff and landing
SUA special use airspace
sUAS small unmanned aircraft system
SVFR special VFR
SWPPP stormwater pollution prevention plan
T/O takeoff
TALPA takeoff and landing performance assessment
TCH threshold crossing height
TDG taxiway design group
TDZ touchdown zone
TEMP temperature
TERPS terminal instrument procedures
TFMSC traffic flow management system counts
TFR temporary flight restriction
TLOF touchdown and liftoff area
TO takeoff
TODA takeoff distance available
TORA takeoff run available
TSA taxiway safety area
TSA Transportation Security Administration
TW taxiway
TWY taxiway
UAS unmanned aircraft system
UAV unmanned aerial vehicle
UTC Coordinated Universal Time or Universal Time Coordinates
VASI visual approach slope indicator
VFR visual flight rules
VHF very high frequency
VIS visibility
VLJs very light jets

VNAV vertical navigation (for GPS approaches)
VOR VHF omnidirectional range
VOR-DME VHF omnidirectional range/distance measurement equipment
VORTAC, VOR/TAC or VOR-TACAN combined VOR and TACAN
VSB visibility
WAAS wide-area augmentation system
WHA wildlife hazard assessment
WHMP wildlife hazard management plan
WX weather
X-Wind crosswind

GLOSSARY

A

above ground level (AGL): Altitude expressed as feet above terrain or airport elevation (see mean sea level).

accelerate-stop distance available (ASDA): The runway plus stopway length declared available and suitable for the acceleration and deceleration of an aircraft aborting a takeoff.

acceptable minimum level of service: The minimum acceptable pavement condition index rating for a category of pavement, such as a general aviation runway.

advisory circular (AC): A series of external, informational Federal Aviation Administration publications consisting of nonregulatory material about a policy and providing guidance for compliance.

aeronautical activity: Any activity that involves, makes possible or is required for the operation of aircraft or that contributes to or is required for the safety of such operations.

Aeronautical Information Manual (AIM): A primary Federal Aviation Administration publication with the purpose of instructing airmen about operating in the National Airspace System of the United States. It provides basic flight information, air traffic control procedures, and general instructional information concerning health, medical facts, factors affecting flight safety, accident and hazard reporting, and types of aeronautical charts and their use.

aircraft approach category (AAC): A lettering system used by the Federal Aviation Administration to group aircraft based on approach speed.

airfield capacity: The maximum number of aircraft operations (landings or takeoffs) that can take place on an airfield in one hour under specific conditions.

airplane design group (ADG): A classification of aircraft by the Federal Aviation Administration based on wingspan and tail height.

airport: An area of land or water that is used or intended to be used for the landing and taking off of aircraft, including its buildings and facilities, if any.

airport director or airport manager: The person responsible for the day-to-day operation of an airport, including the business, administration, operational and communication aspects, and the implementation of policy guidance and longer-term plans for the airport.

airport economic impact: The contribution of an airport to the regional economy, quantified in terms of employment, payroll, and output.

airport elevation: The highest point of an airport's usable runways, measured in feet above mean sea level.

airport hazard: Any structure or natural object on or in the vicinity of a public airport, or any use of land near such an airport, that obstructs the airspace required for the flight of aircraft landing, taking off, or taxiing at the airport.

Airport Improvement Program (AIP): A program that provides financial grants to primarily public agencies for the planning and development of public-use airports that are included in the National Plan of Integrated Airport Systems.

airport layout plan (ALP): A set of drawings that provide a graphic representation of the sponsor's long-term development plan for an airport, including property boundaries, existing and proposed airport facilities and structures, and the location of existing and proposed nonaeronautical areas.

airport master plan (AMP): An assembly of appropriate documents and drawings covering the development of a specific airport from a physical, economic, social, and political jurisdictional perspective by assessing current and projected demands. The master plan typically has a time frame of 20 years, with short-term, intermediate-, and long-term goals within that time frame. The airport layout plan is a part of this plan.

airport operator: The public or private operator or sponsor of a public-use airport.

airport property: Any property, when described as part of an airport in an agreement with the United States or defined by an airport layout plan or listed in an Exhibit "A" property map, that is considered to be obligated property for airport purposes.

airport reference point (ARP): The approximate geometric center of all usable runways at the airport.

Airports Geographic Information System (Airports GIS): The Federal Aviation Administration's system of collecting and compiling airport and aeronautical data.

airport sponsor: Typically, a public agency or tax-supported organization that is authorized to own and operate an airport, obtain funds and property interests, and be legally, financially, and otherwise able to meet all applicable requirements of laws and regulations. Occasionally, it is a private entity.

airport traffic control tower (ATCT): A raised facility on the airfield from which controllers visually, and by radar where available, monitor air traffic and use two-way radios on a designated frequency to direct traffic.

approach lights: A lighting system located off the end of the runway to aid the pilot in identifying the runway environment.

approach procedure with vertical guidance (APV): An instrument approach procedure providing vertical and lateral electronic guidance.

approach reference code (APRC): A code signifying the current operational capabilities of a runway and associated parallel taxiway with regard to landing operations.

approach surface: A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based on the type of approach available or planned for that runway end.

apron/ramp: A defined area on an airport or heliport intended to accommodate aircraft for the purposes of loading passengers or cargo, refueling, parking, or maintenance.

area navigation (RNAV): A method of navigation that allows an aircraft to choose any course within a network of navigation beacons, rather than navigating directly to and from the beacons. It includes lateral navigation providing horizontal alignment guidance to the pilot and can include lateral navigation or vertical navigation providing horizontal and vertical guidance to a pilot.

automated weather observing system (AWOS)/automated surface observing system (ASOS): A system of weather sensors that collects and disseminates weather data to pilots and flight dispatchers so they may prepare for and monitor weather forecasts. The ASOS program is entirely federally funded, whereas AWOS systems are generally operationally funded by the operator or airport sponsor.

automatic dependent surveillance – broadcast (ADS-B): A technological application for pilots and air traffic controllers that uses global positioning system satellites to determine aircraft location, ground speed, and other data, and provides traffic and weather information directly to the cockpits of properly equipped aircraft. ADS-B out equipment allows the aircraft to transmit its position. ADS-B in and out allows the aircraft to transmit its position and receive weather data and flight information services.

avgas: Aviation gasoline used by piston-powered aircraft.

avigation easement: A type of acquisition of an interest in land or property that involves a less-than-fee simple purchase. One form of avigation easement grants an airport the right to perform aircraft operations over the designated property, including operations that might cause noise, vibration, and other effects. A stronger form of easement is a deed restriction that may include the right to perform aircraft operations on the property or the public acquisition of a landowner's rights, restricting the future development of the property for any use more intensive than that existing at the time of the transaction. This easement may also include prohibitions on the uses for which the property may be developed. The maximum heights of structures and other objects may also be specified.

B

based aircraft: Aircraft stationed at an airport on a long-term or permanent basis, usually by some form of agreement between the aircraft owner and airport management.

benefit-cost analysis: A systematic approach to estimating the strengths and weaknesses of alternatives by determining options that provide the best approach to achieve benefits while preserving savings.

blast pad: A surface adjacent to the ends of runways provided to reduce the erosive effect of jet blast and propeller wash.

building restriction line (BRL): A line established with respect to the runway centerline to assure that structures will not project above the imaginary surfaces required by Federal Aviation Regulations, Part 77, and obstruction clearance criteria.

C

categorical exclusion (CatEx): A category of actions that do not individually or cumulatively have a significant effect on the human environment and for which neither an environmental assessment nor an environmental impact statement is required. (Documentation in the form of a CatEx checklist still must be prepared by the airport or its sponsor.)

circling approach: A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible or not desirable.

Class A airspace: Airspace between 18,000 and 60,000 feet mean sea level over the conterminous United States. Instrument flight rule clearances are required for all aircraft operating in Class A airspace. Formerly called the “positive control area.”

Class B airspace: Airspace around the busiest U.S. hub airports, typically to a radius of 20 nautical miles and up to 10,000 feet above ground level. Operations within Class B airspace require an air traffic control clearance and at least a private pilot certificate (local waivers available), radio communication and an altitude-reporting (Mode C) transponder. Formerly called “terminal control area.”

Class C airspace: Airspace around busy U.S. airports (other than Class B). Radio contact with approach control is mandatory for all traffic. This includes an area from the surface to 1,200 feet above ground level out to 5 miles and from 1,200 to 4,000 feet AGL to 10 miles from the airport. Formerly called “airport radar service area.”

Class D airspace: Airspace around an airport with an operating control tower, typically to a radius of 5 miles from the surface to 2,500 feet above ground level. Radio contact with the control tower required prior to entry. Formerly called “airport traffic area.”

Class E airspace: General controlled airspace comprising control areas, transition areas, Victor airways, the continental control area, etc.

Class F airspace: An international airspace designation not used in the United States.

Class G airspace: Uncontrolled airspace; generally, the airspace from the surface up to 700 or 1,200 feet above ground level in most of the United States, but up to as high as 14,500 feet in some remote western and sparsely populated areas.

cockpit to main gear distance (CMG): The distance in feet, from the cockpit to the main gear; used to determine the taxiway design group.

common traffic advisory frequency (CTAF): The radio frequency, sometimes called the UNICOM (universal communications) frequency, used by all traffic at an airport without an operating control tower to coordinate approaches, landings, takeoffs, and departures. Pilots announce their positions, intentions, and actions in the traffic pattern for the benefit of other traffic.

concurrent use: The use of aeronautical land for a compatible, nonaeronautical revenue-producing purpose.

conical surface: A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

construction safety and phasing plan (CSPP): A document that outlines procedures to maintain operational safety on an airport during construction

projects. This plan identifies how to minimize construction impacts on operations.

critical aircraft: The most demanding aircraft type or grouping of aircraft with similar characteristics that make regular use of the airport. “Regular use” is 500 annual operations, excluding touch-and-go operations. An operation is a takeoff or landing.

D

day-night average sound level (DNL): The 24-hour average sound level, in decibels, for the period from midnight to midnight, obtained after the addition of 10 decibels to sound levels for the periods between 10 p.m. and 7 a.m.

decision altitude (DA): A specified lowest height or altitude in the approach of an aircraft to a runway; if the required visual reference to continue the approach (such as the runway markings or runway environment) is not visible to the pilot, then the pilot must initiate a missed approach.

declared distances: The distances the airport owner declares available for aircrafts’ takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements.

deed restrictions: A legal mechanism to restrict the use of a property to define certain conditions in perpetuity.

departure obstacle clearance surface: A 40:1 surface originating at the location and elevation of the departure end of the runway, which is used to evaluate required climb performance from a particular departure runway end to the nearest (shortest distance) obstacle in the segment.

design aircraft: An aircraft with characteristics that determine the application of airport design standards for a specific runway, taxiway, taxilane, apron, or other facility. This aircraft can be a specific aircraft model or a composite of several aircraft that are using, expected to use, or intended to use the airport or part of the airport. (Also called “critical aircraft” or “critical design aircraft.”)

discretionary funds: Airport Improvement Program grant funds remaining within the obligation limitation, after entitlement calculation, subject to restrictions in legislation and available for distribution at the Federal Aviation Administration discretion, per the FAA’s priority system.

displaced threshold: A runway landing threshold located at a point other than the designated beginning of the runway (where departures would begin).

distance measuring equipment (DME): Aircraft equipment that provides pilots with a readout of the distance between the DME facility (airport) and the aircraft.

E

entitlement funds: A set minimum level of Airport Improvement Program funding for an airport, based on the Federal Aviation Administration’s criteria. The minimum differs for primary and nonprimary airports, based on enplanement levels for primary air carrier airports and standard allocation for each nonprimary airport.

environmental assessment (EA): An assessment of the environmental effects of a proposed action for which federal financial assistance is being requested or for which federal authorization is required. The EA serves as the basis for the Federal Aviation Administration’s environmental impact statement or finding of no significant impact.

environmental due diligence audit (EDDA): An audit performed to identify and minimize potential environmental liabilities prior to the purchase of a property.

environmental impact statement (EIS): A document prepared under the requirements of the National Environmental Policy Act of 1969, Section 102(2)(c) representing a federal agency’s evaluation of the effect of a proposed action on the environment. (The Federal Aviation Administration will serve as the sponsor.)

Exhibit “A” property map: A drawing of the dedicated airport property, including detailed information about how the property was acquired, the funding source for the land, and if the land was conveyed as federal surplus land or government property.

F

FAR Part 77: Objects Affecting Navigable Airspace: Part 77 establishes standards for determining obstructions in navigable airspace, outlines the requirements for notifying the Federal Aviation Administration of certain proposed constructions or alterations, and provides for aeronautical studies of obstructions to air navigation to determine their effect on the safe and efficient use of airspace. Section 77.25 establishes imaginary surfaces around airport runways, approach zones, and navigable airspace in the vicinity of the airport.

FAR Part 91: General Operating and Flight Rules: Part 91 prescribes the rules governing the operation of aircraft within the United States, including the waters within 3 nautical miles of the United States coast. It also establishes operators' requirements to support the continued airworthiness of each aircraft.

FAR Part 107: Small Unmanned Aircraft Systems: Part 107 establishes the registration of airmen and the certification and operation of small (weighing less than 55 pounds) unmanned aircraft systems within the United States.

FAR Part 137: Agricultural Aircraft Operations: Part 137 prescribes the rules governing agricultural aircraft operations within the United States and the issuance of commercial and private agricultural aircraft operator certificates for those operations.

Federal Aviation Administration (FAA): The United States Department of Transportation's agency for aviation. In addition to regulating airports, aircraft manufacturing and parts certification, aircraft operation and pilot certification ("licensing"), the FAA operates air traffic control, purchases and maintains navigation equipment, certifies airports, and aids airport development, among other activities.

Federal Aviation Regulations (FAR): Regulations established by the Federal Aviation Administration located in Title 14 of U.S. Code of Federal Regulations. These regulations are the rules that govern the operation of aircraft, airways, airports, and airmen.

federal grant assurance: A provision of a federal grant agreement to which the recipient of federal airport development assistance has agreed to comply.

federally obligated airport: An airport that has accepted federal grant funds and the associated requirements known as grant assurances.

fee simple ownership: This is considered to be the full property ownership in land wherein the owner has the exclusive right to use it, exclusively possess it, commit waste upon it, dispose of it by deed or will, and take its fruits.

finding of no significant impact (FONSI): An administrative determination by the Federal Aviation Administration that a proposed action by the airport sponsor will have no significant impact on the environment.

fixed-base operator (FBO): A commercial business granted the right by the airport sponsor to operate at an airport and provide aeronautical services, such as fueling, hangaring, tie-down and parking, aircraft rental, aircraft maintenance, flight instrument, etc.

flight plan: Filed by radio, telephone, computer, or in person with flight service stations, a record of aircraft number, type, and equipment; estimated time of departure and time en route; route and altitude to be flown; amount of fuel and number of persons aboard; home base and contact phone number; and other information.

- *visual flight rules flight plan:* A voluntary filing for cross-country flights under visual flight rules. This is for search and rescue use only, with no role for air traffic control.
- *Instrument flight rules flight plan:* A mandatory filing (at least one-half hour) before a flight under instrument flight rules. Based on flight plan information, air traffic control can issue (immediately before departure) an instrument flight rules clearance to enter clouds or low-visibility conditions for instrument rather than visual flight.

foreign object damage and foreign object debris (FOD): Foreign object debris is a substance, debris or article alien to an aircraft or aircraft system that could potentially damage the aircraft. Foreign object damage is any damage attributed to a foreign object that can be expressed in physical or economic terms and may or may not degrade the

aircraft's required safety or performance characteristics.

frangible: An object that retains its structural integrity and stiffness up to a designated maximum load but on impact from a greater load, it breaks, distorts, or yields in such a manner as to cause minimum damage to an aircraft.

fuel farm: A consolidated location for bulk fuel storage and equipment, on or off an airport.

fuel flowage fee: A fixed fee added to each gallon of fuel pumped or a percentage added to the fuel purchased at the airport to support airport operations, which is generally collected from a private entity that provides the fueling services and is remitted to the airport owner.

G

general aviation (GA): All civil aviation (excluding military), except those classified as air carrier or air taxi. The types of aircraft typically used in general aviation activities vary from multiengine jet aircraft to single-engine piston aircraft for purposes such as personal, business, and instructional flying.

general aviation airport: An airport not classified as commercial service or military.

general aviation operations: Operations that are performed by all civil aircraft not classified as air carrier, military, or air taxi aircraft.

geographic information system (GIS): A system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data.

glide path qualification surface (GQS): An imaginary 30:1 trapezoidal surface applicable to approaches with vertical guidance, extending from the runway threshold along the runway centerline to 10,000 feet from the runway end. Also referred to as vertical qualification surface.

glideslope: An angle approach to a runway using the glideslope antenna of an instrument landing system.

global positioning system (GPS): A satellite-based navigation system operated by the Department of Defense, providing accurate latitude and longitude positions, times, and speeds to civilian and military users.

grant assurances: Obligations undertaken by the airport sponsor when it accepts funds from the Federal Aviation Administration-administered airport financial assistance program.

H

hangar: A large building at an airport in which planes can be stored and maintained.

hazardous wildlife: Any species of wildlife, both feral animals and domesticated animals not under control, that are associated with aircraft strike problems, are capable of causing structural damage to airport facilities, or act as attractants to other wildlife that pose a strike hazard.

hazard to air navigation: An existing or proposed object that will have a substantial adverse effect on the safe and efficient use of navigable airspace by aircraft.

horizontal surface: A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of a specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The radii of the arcs are 5,000 or 10,000 feet, depending on the runway category or approach type.

I

instrument approach procedure (IAP): A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the approach to a landing or to a point from which a landing may be completed with visual references. (See instrument flight rules).

instrument flight rules (IFR): A set of regulations and procedures permitting qualified and current IFR pilots to penetrate clouds and low-visibility conditions. Aircraft must be equipped with radio and navigation instruments and operate under air traffic control flight plans and clearances. Flights are monitored, and traffic is separated by air traffic control. (See also visual flight rules).

instrument landing system (ILS): A precision instrument approach system using radio transmitters at the runway ends that provides precise descent and course guidance to the runway, permitting aircraft to land during periods of low ceilings or poor visibility.

- *Category I (CAT I)*: An instrument approach or approach and landing with a height above threshold (HATh) or minimum descent altitude not lower than 200 feet and with either a visibility not less than ½ statute mile or a runway visual range not less than 1,800 feet.

itinerant operation: An arrival or departure performed by an aircraft from or to a point beyond the local airport area. Also defined as all aircraft arrivals and departures other than local operations.

J

Jet A: A type of aviation fuel used in aircraft powered by gas-turbine engines.

K

knot (nautical mile per hour): The most common measure of aircraft speed; 100 knots equals 115 statute miles per hour. (For mph, multiply knots by 1.15.)

L

landing distance available (LDA): The runway length declared available and suitable for landing an aircraft.

landing fee: A charge paid by an aircraft owner to an airport for landing at a particular airport.

land lease: A long-term land lease, generally for the purpose of erecting a building or buildings or for constructing improvements to the land to be used by the lessee. The land lease should reference the airport's rules, regulations, and minimum standards. The land lease price per square foot could vary by location, possibly by the length of the term, and may be connected to a business permit or a fixed-base operator lease.

land release: The release of airport property not needed for present or future aeronautical purposes but subject to federal obligations from the terms of the agreement with the United States government. It is defined as the formal, written authorization discharging and relinquishing the Federal Aviation Administration's right to enforce an airport's contractual obligations.

large aircraft: An aircraft with a maximum certificated takeoff weight of more than 12,500 pounds.

localizer (LOC): Part of an instrument landing system that provides lateral deviations from a preset course.

local operation or traffic: Aircraft operating in the traffic pattern or within sight of the tower, aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the airport. Touch-and-go operations are local operations.

M

magnetic variation (MVAR, MAGVAR): The difference between true north and magnetic north, varying with position. The magnetic variation drifts with time.

main gear width (MGW): The distance from the outer edge to the outer edge of the widest set of main gear tires.

mean sea level (MSL): Altitude expressed as feet above sea level, rather than above local terrain (i.e., AGL). To ignore varying terrain elevations, all navigational altitudes and barometric altimeters are based on height above MSL. Only radar altimeters, which measure the distance between the aircraft and the ground at low altitudes, indicate actual height above the ground.

minimums: Weather condition requirements established for a particular operation or type of operation — e.g., instrument flight rules takeoff or landing, alternate airport for instrument flight rules flight plans, etc.

minimum standards: Sponsor-established minimum service levels and development space requirements for commercial aeronautical activities at the airport.

missed approach: A maneuver conducted by a pilot when an instrument approach cannot be

completed for a landing. The route of flight and altitude are shown on instrument approach procedure charts. A pilot executing a missed approach prior to the missed approach point (MAP) must continue along the final approach to the MAP. The pilot may immediately climb to the altitude specified in the missed approach procedure.

modification to standards (MOS): Any approved nonconformance to Federal Aviation Administration standards to airport design, construction, or equipment procurement. These modifications are issued by the FAA on a case-by-case basis while maintaining an acceptable level of safety.

movement area: The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, including helicopters and tilt-rotors.

N

National Airspace System (NAS): The airspace, navigation facilities, and airports of the United States, along with their associated information, services, rules, regulations, policies, procedures, personnel, and equipment.

National Environmental Policy Act (NEPA): A United States environmental law that established a U.S. national policy promoting the enhancement of the environment. NEPA requires each federal agency to disclose to the public a clear, accurate description of the potential environmental impacts that the proposed federal action and reasonable alternative to those actions would cause.

National Plan of Integrated Airport Systems (NPIAS): Public-use airports that are considered necessary to provide a safe, efficient, and integrated system of airports to meet the needs of United States civil aviation, national defense, and the U.S. Postal Service.

National Transportation Safety Board (NTSB): The independent federal agency charged with investigating and finding “probable cause” of transportation accidents.

nautical mile: The most common distance measurement in aviation, equivalent to 1.15 statute (standard U.S.) miles.

navigational aid (navaid): Any form of aid to navigation designed to assist the pilot with position and height information and wind conditions. Examples: instrument landing systems, VASIs, PAPIs, wind cones, and very high frequency omnidirectional ranges.

Next Generation Air Transportation System: A federal program to transform the National Airspace System from a ground-based system to a satellite-based system.

N-numbers: Federal government aircraft registration numbers. U.S.-registered aircraft numbers begin with N, Canadian numbers with C or CF, German numbers with D, United Kingdom numbers with G, French numbers with F, Japanese numbers with JA, etc.

noise contours: The lines on a map that connect the points of equal noise exposure values. They are usually drawn in 5 dB intervals, such as DNL 75 dB values, DNL 70 dB values, DNL 65 dB values, and so forth.

nondirectional beacon (NDB): An older radio navigation system in which an automatic direction finder points to the beacon, thus providing a relative bearing.

nonprecision approach procedure: A standard instrument approach procedure with minimums not lower than ¾ mile and/or a 250-foot ceiling, for which at least horizontal guidance is provided with a ground-based navigational aid or global positioning system (GPS). A nonprecision approach using GPS may also provide vertical guidance, depending on the approach and equipment of the aircraft.

nonprimary airport: A National Plan of Integrated Airport Systems airport with 10,000 or fewer annual passenger boardings (enplanements).

nontowered airport: An airport without a control tower. The majority of America’s 13,000 airports are nontowered (only 680 airports have control towers). Nontowered airports are far from being “uncontrolled.” Pilots follow traffic pattern procedures and self-announce positions and intentions using the common traffic advisory frequency, usually called the UNICOM frequency.

notice to airmen (NOTAM): A notice containing information concerning the establishment of, condition of, change to any component (facility, service, or procedure) of, or hazard in the National Airspace System, the timely knowledge of which is essential to personnel concerned with flight operations.

O

object free area (OFA): The area of the airport centered on the runway, taxiway, or taxilane centerline that is provided to enhance the safety of aircraft operations by having the area free of objects, except for those that are necessary for air navigation or aircraft ground maneuvering, which are required to be mounted on frangible couplings.

obstacle: An existing object, object of natural growth, or terrain at a fixed geographical location or that may be expected at a fixed location within a prescribed area, with reference to which vertical clearance is or must be provided during flight operation.

obstacle clearance surface (OCS): A surface that defines the minimum required obstruction clearance for approach or departure procedures.

obstacle free zone (OFZ): A volume of space above and adjacent to a runway and its approach lighting system, if one exists, free of all fixed objects, except Federal Aviation Administration-approved frangible aeronautical equipment, and clear of vehicles and aircraft in the proximity of an airplane conducting an approach, missed approach, landing, takeoff, or departure.

obstruction: An object that exceeds a limiting height or penetrates an imaginary surface described by current Federal Aviation Regulations (Part 77).

Obstruction Evaluation/Airport Airspace Analysis (OE/AAA): A public website provided by the Federal Aviation Administration to enable individuals and organizations engaged in sponsoring the construction or alteration of potential obstructions on and off airport property to easily notify the FAA of their intents and activities. This allows the FAA to evaluate the impacts of these activities on the airspace system.

operation: A takeoff or a landing.

P

parallel taxiway: A taxiway parallel to a runway.

pavement condition index (PCI): A numerical rating of the pavement condition based on a visual observation of distresses.

pavement management program (PMP): Also referred to as pavement maintenance management program or pavement management system. Procedures for collecting, analyzing, maintaining, and reporting pavement data to assist an airport in finding optimum strategies for maintaining pavements in a safe, serviceable condition over a given period for the least cost.

performance-based navigation (PBN): The broad range of technologies that rely on the performance and capabilities of equipment on board the aircraft.

precision approach path indicator (PAPI): A visual aid that provides guidance information to help a pilot acquire and maintain the correct approach, relative to aircraft altitude, to a runway.

precision instrument procedure: A standard instrument procedure for an aircraft to approach an airport in which a vertical and horizontal guidance is provided to the pilot using an instrument landing system, military precision approach radar, or global positioning system, with visibility of ¾ mile or less and/or a ceiling less than 250 feet.

primary surface: A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; but when the runway has no specially prepared hard surface, the primary surface ends at each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The surface width varies from 250 feet to 1,000 feet, based on the runway category and approach type.

R

record of decision (ROD): A written decision of the Federal Aviation Administration's approval or disapproval of an action proposed in an environmental impact statement. The ROD explains

what the airport sponsor proposes to do and why, identifies actions the FAA and other federal agencies must take, explains the alternatives analyzed and which one is environmentally preferred, and identifies the required mitigation measures.

required navigation performance (RNP): A type of performance-based navigation that allows an aircraft to fly a specific path between two 3D defined points in space.

rotating beacon: A rotating light providing visual guidance for the airport between sunset and sunrise and when the reported ceiling or visibility is below basic visual flight rule minimums.

runway (RWY): A defined rectangular area on a land-based airport that is prepared for the landing and takeoff run of aircraft along its length. Runways are normally numbered in relation to their magnetic direction, rounded off to the nearest 10 degrees, e.g., Runway 1, Runway 25.

runway design code (RDC): A code signifying the design standards for building a runway.

runway edge lights: Lights that are used to define the lateral limits of a runway.

runway end identifier lights (REILs): Two synchronized flashing lights, one on each side of the runway threshold, that provide a pilot with a rapid and positive visual identification of the approach end of a particular runway.

runway heading: The magnetic direction indicated by the runway number. When cleared to "fly/maintain runway heading," pilots are expected to comply with the air traffic control clearance by flying the heading indicated by the runway number without applying any drift correction, e.g., Runway 4, 040 magnetic heading; Runway 20, 200 magnetic heading.

runway holding position (hold line): The purpose of holding-position markings is to prevent aircraft and vehicles from entering critical areas associated with a runway or navigational aids or to control traffic at the intersection of taxiways.

runway incursion: A top Federal Aviation Administration safety concern, runway incursions are defined by the FAA as "any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and takeoff of aircraft." Runway incursions can be caused by pilot deviations, air traffic controller operational incidents and ground vehicle deviations.

runway protection zone (RPZ): A trapezoidal area at ground level off the runway end to enhance the protection of people and property on the ground, which is achieved through airport owner control. Such control includes clearing RPZ areas (and keeping them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ.

runway safety area (RSA): A cleared, drained, graded, and preferably turfed area symmetrically located about the runway which, under normal conditions, is capable of supporting snow removal, firefighting, and rescue equipment and accommodating the occasional passage of aircraft without causing major damage to the aircraft.

runway threshold: The beginning of that portion of a runway usable for landing or takeoff.

runway visual range (RVR): Visibility along a runway. At major airports, it is measured automatically by transmissometer.

S

safety management system (SMS): A top-down, organization-wide approach to managing safety risk and assuring the effectiveness of safety-risk controls. It includes systematic procedures, practices, and policies for managing safety risk.

self-fueling: The fueling or servicing of an aircraft by the owner of the aircraft.

self-inspection program: A program to find potential hazards and address them to keep the airport in good operating condition. The program includes four types of inspections generally used by airports as part of a self-inspection program: routine or scheduled, continuous surveillance, periodic condition, and special inspections.

shoulder: An area adjacent to the defined edge of paved runways, taxiways, or aprons, providing a

transition between the pavement and the adjacent surface.

small aircraft: An aircraft with a maximum certificated takeoff weight of 12,500 pounds or less.

small unmanned aircraft system (sUAS): An unmanned aircraft and its associated elements, including communication links and the components that control the small unmanned aircraft, that are required for the safe and efficient operation of the small unmanned aircraft in the National Airspace System.

state apportionment: State apportionment is available for all airports within a state except primary airports, with the available funds apportioned for airports within that state based on the state's proportional population to the total population of the eligible states and the state's proportional area to the total area of the eligible states. Only in block grant states are the state apportionment funds apportioned to the state. In non-block grant states, the Federal Aviation Administration's Airports organization programs and disburses the funds, but the state may provide input into programming, along with using the FAA priority system.

State Block Grant Program: A Federal Aviation Administration program in which 10 states participate that provides Airport Improvement Program funds to the state to allow the states to program, prioritize, select, and fund AIP projects at small airports.

state system plan: A planning tool to identify the development needed to establish a viable system of airports within the state.

stopway: An area beyond the takeoff runway, no less wide than the runway and centered on the extended centerline of the runway, able to support the aircraft during an aborted takeoff, without causing structural damage to the aircraft, and designated by the airport authorities for use in decelerating the aircraft during an aborted takeoff.

stormwater pollution prevention plan (SWPPP): A stormwater management plan addressing stormwater discharge from the airport that incorporates best management practices.

straight-in instrument approach: An instrument approach wherein the final approach is begun without first having executed a procedure turn, and not necessarily completed with a straight-in landing or made to use a straight-in landing weather minimum.

T

takeoff distance available (TODA): The takeoff run available (TORA) plus the length of any remaining runway or clearway beyond the far end of the TORA; the full length of the TODA may need to be reduced because of obstacles in the departure area.

takeoff run available (TORA): The runway length declared available and suitable for the ground run of an aircraft taking off.

taxi: The movement of an airplane under its own power on the surface of an airport; also, the surface movement of helicopters equipped with wheels.

taxilane: The portion of the aircraft parking area used for access between taxiways, aircraft parking positions, hangars, storage facilities, etc.

taxiway (TWY): A defined path, from one part of an airport to another, selected or prepared for the taxiing of aircraft.

taxiway design group (TDG): A classification of airplanes based on the width of the outer to outer main gear and the distance of the cockpit to the main gear.

taxiway/taxilane safety area (TSA): A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft deviating from the taxiway.

tenant: Any person, other than an aircraft operator or foreign air carrier, who has an agreement with the airport operator to conduct business on airport property.

terminal instrument procedures (TERPS): Procedures for the instrument approach and departure of aircraft to and from civil and military airports.

T-hangar: A hangar building, typically containing multiple units. This type of hangar derives its name

from the shape of the interior of the units (in the form of a T), which increases the efficiency of the design to accommodate the wingspan and the tail section of an aircraft.

threshold: The beginning of that portion of the runway usable for landing.

through-the-fence: Access to the airfield granted by the sponsor or a public airport to a person or business that owns property adjacent to the airport for the person's or business' aircraft or an authorized aircraft to taxi onto and use the airport.

touch-and-go operation: A practice maneuver consisting of a landing and a takeoff performed in one continuous movement: the aircraft lands and begins a takeoff roll without stopping. A touch-and-go is considered two operations.

traffic pattern: A standard rectangular flight pattern around the landing runway at an airport. It includes 45-degree or crosswind entry to the rectangle, with downwind, base, and final legs as sides of the rectangle. Also standard are 90-degree left turns around the rectangle (a nonstandard right-hand traffic pattern is noted in airport facility directories) with downwind flown at a specified altitude, usually 1,000 or 1,500 feet above the airport elevation. At airports with a control tower, the pattern may be modified or cut short, according to air traffic control instructions.

transient aircraft: Aircraft not based at the airport.

transitional surface: Surfaces that extend outward and upward at right angles to the runway centerline, and the runway centerline is extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces. Transitional surfaces for those portions of the precision approach surface, which project through and beyond the limits of the conical surface, extend 5,000 feet, measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

turbojet aircraft: An aircraft having a jet engine in which the energy of the jet operates a turbine that, in turn, operates the air compressor.

turboprop aircraft: An aircraft having a jet engine in which the energy of the jet operates a turbine that drives the propeller.

U

ultralight vehicle: An aeronautical vehicle operated for sport or recreational purposes that does not require Federal Aviation Administration registration, an airworthiness certificate, or pilot certification. Primarily a single-occupant vehicle, although some two-place vehicles are authorized for training purposes. Its operation in certain airspace requires authorization from air traffic control.

UNICOM: A common, multipurpose radio frequency used at most nontowered airports as the common traffic advisory frequency. The Aircraft Owners and Pilots Association coined the term from "universal communications" in the 1950s. UNICOM is also used by a fixed-base operator for general administrative uses, including fuel orders, parking instructions, etc. Originally 122.8 MHz universally, it now includes 122.7, 123.0, and other frequencies.

unmanned aerial vehicle (UAV): Also known as a drone or unmanned aircraft system; an aircraft without a human pilot aboard. The flight of UAVs may operate either under remote control by a human operator or fully or intermittently autonomously by onboard computers.

utility airport: An airport designed, constructed, and maintained to serve airplanes having approach speeds less than 121 knots.

V

very high frequency (VHF) omnidirectional range (VOR): A type of radio beacon on which a tried-and-tested radio navigation system is largely based. It broadcasts 360 radial signals like spokes in a wheel; the equipment on the aircraft determines which radial the aircraft is on to provide direction to and from an airport or given location.

very light jets (VLJs): Jet aircraft with a maximum takeoff weight of 10,000 pounds, certified for single-pilot operations, equipped with advanced avionic systems, and priced below other business jets.

visibility: The ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unlighted objects by day and prominent lighted objects by night. Visibility is reported as statute miles, hundreds of feet, or meters.

visual approach: An approach to an airport wherein an aircraft on an instrument flight rules flight plan, operating in visual flight rules conditions under the control of a radar facility and having an air traffic control authorization, may deviate from the prescribed instrument approach procedure and proceed to the airport of destination, served by an operational control tower, by visual reference to the surface.

visual approach slope indicator (VASI): A system of lights arranged to provide visual descent guidance information during the approach to a runway (see also precision approach path indicator).

visual area surface: The 20:1 visual area surface is defined in Section 3.3.2.c of *Federal Aviation Administration Order 8260.3B: United States Standard for Terminal Instrument Procedures*. The surface has a vertical slope of 20:1, extending from the runway's threshold elevation to the decision altitude of the specific approach. It begins 200 feet prior to the runway threshold and is intended to protect aircraft during the last stages of an approach, which follows the transition from instruments to visual guidance.

visual flight rules (VFR): A defined set of Federal Aviation Administration regulations covering the operation of aircraft, primarily by visual reference to the horizon (for aircraft control) and see-and-avoid procedures (for traffic separation). VFR weather minimums for controlled airspace require at least a 1,000-foot ceiling and 3 miles of visibility, except for "special VFR" clearances to operate "clear of clouds."

- *marginal VFR*: Weather of less than the 3,000-foot ceiling and 5 miles of visibility, but above the required "1,000 and three" (see instrument flight rules).

visual runway: A runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on a Federal Aviation Administration-approved airport layout plan.

W

wide-area augmentation system (WAAS): An enhancement to the global positioning system (GPS) that provides greater navigation accuracy and system integrity and permitting GPS to be used for precision instrument approaches to most airports.

wildlife attractants: Any human-made structure, land use practice or human-made or natural geographic feature that can attract or sustain hazardous wildlife within the landing or departure airspace, apron areas, or aircraft parking areas of an airport.

wildlife hazard assessment (WHA): An evaluation of wildlife-related attractants and potential hazards to aircraft operations, often mandated by the Federal Aviation Administration following a hazardous event or new potential threat.

wildlife hazard management plan (WHMP): A document that identifies measures to alleviate or eliminate wildlife hazards, as identified in a wildlife hazard assessment.

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APPENDIX B: SUMMARY OF PCI LEVELS

TABLE B.1: PAVEMENT CONDITION INDEX SUMMARY – SECTION LEVEL

Network ID	Branch ID	Branch Use	Section ID	Area (SF)	PCI	Condition Rating
VRB	RW 4-22	Runway	6305	437,674	84	Satisfactory
VRB	RW 4-22	Runway	6310	48,926	100	Good
VRB	RW 12L-30R	Runway	6205	169,050	84	Satisfactory
VRB	RW 12L-30R	Runway	6215	26,250	78	Satisfactory
VRB	RW 12L-30R	Runway	6220	67,500	81	Satisfactory
VRB	RW 12R-30L	Runway	6105	162,750	100	Good
VRB	RW 12R-30L	Runway	6110	573,090	100	Good
VRB	RW 12R-30L	Runway	6115	31,500	100	Good
VRB	TW A	Taxiway	101	12,340	86	Good
VRB	TW A	Taxiway	102	25,470	77	Satisfactory
VRB	TW A	Taxiway	105	59,360	64	Fair
VRB	TW A	Taxiway	110	29,000	67	Fair
VRB	TW A	Taxiway	115	5,740	57	Fair
VRB	TW A	Taxiway	120	11,778	66	Fair
VRB	TW A	Taxiway	125	11,250	61	Fair
VRB	TW A	Taxiway	130	9,282	68	Fair
VRB	TW A	Taxiway	134	9,625	83	Satisfactory

Network ID	Branch ID	Branch Use	Section ID	Area (SF)	PCI	Condition Rating
VRB	TW A	Taxiway	135	52,226	56	Fair
VRB	TW A	Taxiway	140	7,788	86	Good
VRB	TW A1	Taxiway	150	7,244	64	Fair
VRB	TW A1	Taxiway	155	11,073	86	Good
VRB	TW A2	Taxiway	142	13,827	84	Satisfactory
VRB	TW A2	Taxiway	143	4,268	84	Satisfactory
VRB	TW B	Taxiway	201	10,353	83	Satisfactory
VRB	TW B	Taxiway	205	73,775	59	Fair
VRB	TW B	Taxiway	206	4,213	51	Poor
VRB	TW B1	Taxiway	151	5,576	68	Fair
VRB	TW B1	Taxiway	152	8,073	88	Good
VRB	TW C	Taxiway	305	83,003	94	Good
VRB	TW C	Taxiway	306	31,809	83	Satisfactory
VRB	TW C	Taxiway	307	6,396	86	Good
VRB	TW C	Taxiway	309	10,088	84	Satisfactory
VRB	TW C	Taxiway	310	38,030	68	Fair
VRB	TW C	Taxiway	312	32,050	60	Fair
VRB	TW C	Taxiway	315	195,535	94	Good
VRB	TW C1	Taxiway	390	43,685	100	Good
VRB	TW C2	Taxiway	328	5,659	94	Good
VRB	TW C2	Taxiway	330	23,333	94	Good
VRB	TW C2	Taxiway	335	15,426	100	Good
VRB	TW C3	Taxiway	350	28,935	42	Poor
VRB	TW C3	Taxiway	354	10,620	39	Very Poor
VRB	TW C3	Taxiway	355	9,405	89	Good
VRB	TW C3	Taxiway	356	12,737	73	Satisfactory
VRB	TW C4	Taxiway	360	15,336	100	Good
VRB	TW C4	Taxiway	365	18,877	94	Good
VRB	TW C5	Taxiway	375	17,291	100	Good
VRB	TW C5	Taxiway	385	11,889	86	Good
VRB	TW C6	Taxiway	304	15,197	100	Good
VRB	TW D	Taxiway	405	25,540	100	Good
VRB	TW D	Taxiway	410	14,032	64	Fair
VRB	TW D	Taxiway	414	19,328	100	Good
VRB	TW D	Taxiway	415	57,753	81	Satisfactory
VRB	TW D	Taxiway	420	13,244	86	Good
VRB	TW E	Taxiway	505	16,516	80	Satisfactory
VRB	TW E	Taxiway	515	35,421	84	Satisfactory
VRB	TW E	Taxiway	520	182,990	94	Good
VRB	TW E1	Taxiway	525	22,920	94	Good
VRB	TW E3	Taxiway	530	29,517	100	Good
VRB	TW F	Taxiway	605	21,104	88	Good
VRB	TW F	Taxiway	610	49,875	84	Satisfactory
VRB	TW F	Taxiway	611	21,000	88	Good
VRB	TW F	Taxiway	612	30,660	82	Satisfactory
VRB	TW F	Taxiway	630	7,958	84	Satisfactory
VRB	TW F1	Taxiway	625	8,845	82	Satisfactory

Network ID	Branch ID	Branch Use	Section ID	Area (SF)	PCI	Condition Rating
VRB	TW F2	Taxiway	620	9,130	83	Satisfactory
VRB	TL AP W	Taxilane	3305	46,522	94	Good
VRB	TL SW	Taxilane	4505	35,304	86	Good
VRB	TL SW	Taxilane	4510	47,352	73	Satisfactory
VRB	TL SW	Taxilane	4515	39,359	67	Fair
VRB	TL SW	Taxilane	4520	31,196	65	Fair
VRB	TL SW	Taxilane	4525	24,241	70	Fair
VRB	TL SW	Taxilane	4530	13,852	86	Good
VRB	TL SW	Taxilane	4535	28,664	17	Serious
VRB	AP CENTER	Apron	4205	230,112	42	Poor
VRB	AP CENTER	Apron	4210	24,110	50	Poor
VRB	AP CENTER	Apron	4215	206,039	48	Poor
VRB	AP CENTER	Apron	4220	37,054	37	Very Poor
VRB	AP CENTER	Apron	4240	110,690	100	Good
VRB	AP CENTER	Apron	4245	122,479	100	Good
VRB	AP CENTER	Apron	4250	50,351	98	Good
VRB	AP CENTER	Apron	4255	201,350	100	Good
VRB	AP CENTER	Apron	4260	14,850	100	Good
VRB	AP N	Apron	4605	314,515	100	Good
VRB	AP N	Apron	5405	221,090	91	Good
VRB	AP N	Apron	5410	51,735	43	Poor
VRB	AP N	Apron	5420	11,919	90	Good
VRB	AP RU 12L	Apron	5505	22,034	59	Fair
VRB	AP RU 12L	Apron	5506	15,486	81	Satisfactory
VRB	AP RU 12R	Apron	5205	98,702	94	Good
VRB	AP RU 30L	Apron	5305	52,790	94	Good
VRB	AP RU 30R	Apron	5515	21,638	85	Satisfactory
VRB	AP RU 4	Apron	5105	26,770	58	Fair
VRB	AP RU 4	Apron	5110	35,776	84	Satisfactory
VRB	AP SW	Apron	4105	218,427	30	Very Poor
VRB	AP SW	Apron	4110	2,787	66	Fair
VRB	AP W	Apron	4305	24,038	83	Satisfactory
VRB	AP W	Apron	4310	85,647	47	Poor
VRB	AP W	Apron	4312	3,090	70	Fair
VRB	AP W	Apron	4315	31,823	85	Satisfactory
VRB	AP W	Apron	4405	205,414	46	Poor
VRB	AP W	Apron	4410	40,406	56	Fair
VRB	AP W	Apron	4415	14,800	66	Fair
VRB	AP W	Apron	4420	135,726	90	Good
VRB	AP W	Apron	4425	79,636	94	Good
VRB	AP W	Apron	4430	39,564	86	Good
VRB	AP W	Apron	4435	83,983	88	Good
VRB	AP W	Apron	4440	101,138	100	Good
VRB	AP W	Apron	4445	32,834	40	Very Poor
VRB	AP W	Apron	4450	15,826	74	Satisfactory

APPENDIX C: VRB MINIMUM STANDARDS

ATTACHMENT "C"

RESOLUTION NO. 2018-08

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF VERO BEACH, FLORIDA, REPEALING RESOLUTION NO. 2677; APPROVING AIRPORT MINIMUM STANDARDS FOR VERO BEACH REGIONAL AIRPORT; PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the City of Vero Beach owns and operates the Vero Beach Regional Airport which serves the commercial and general aviation needs of the public; and

WHEREAS, the City Council of the City of Vero Beach, Florida, finds that the existing the Airport Minimum Standards for Vero Beach Regional Airport ("Minimum Standards"), last updated in 1976, requires amendment to reflect current City policies and practices, statutory changes, clarification of existing language, and removal of certain sections that have been incorporated into other provisions of the Code; and

WHEREAS, the Federal Aviation Administration (FAA) has reviewed and accepted the revised Minimum Standards, attached hereto as Exhibit "A"; and

WHEREAS, the affected tenants were given the opportunity to review and provide comments, attached hereto as Exhibit "B", and

WHEREAS, the City Council finds that approving these Minimum Standards serves a municipal purpose and is in the public interest as it complements the latest Airport Master Plan and Sustainable Business Plan;

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF VERO BEACH, FLORIDA THAT:

Section 1 – Adoption of "Whereas" clauses.

The foregoing "Whereas" clauses are hereby adopted and incorporated herein as forming the legislative findings, purpose, and intent of this Resolution.

Section 2 – Repeal of Resolution No. 2677

Resolution No. 2677 is hereby repealed and replaced in its entirety by this Resolution.

Section 3 – Approval and Adoption of Minimum Standards.

The City Council hereby approves and adopts the Minimum Standards attached hereto as Exhibit "C".

Section 4 – Conflict and severability.

In the event any provision of this Resolution conflicts with any other resolution of the City Council, the provisions of this Resolution shall apply and govern on the subject matter or this Resolution. If any provision, phrase, or portion of this Resolution or application thereof to any person or circumstance is held to be invalid, unconstitutional, or unenforceable for any reason by a court of competent jurisdiction, such invalidity shall not affect the validity of the remaining portions of this Resolution,

which shall be deemed separate, distinct, and independent provisions enforceable to the fullest extent possible.

Section 5 – Effective Date.

This Resolution shall become effective upon adoption by the City Council.

****

This Resolution was heard on the 17th day of April 2018, at which time it was moved for adoption by Councilmember Moss, seconded by Councilmember Young, and adopted by the following vote of the City Council:

Mayor Harry Howle III	yes
Vice Mayor Lange Sykes	absent
Councilmember Laura Moss	yes
Councilmember Anthony W. Young	yes
Councilmember Val Zudans	absent

ATTEST:

Tammy K. Bursick
City Clerk

CITY COUNCIL
CITY OF VERO BEACH, FLORIDA

Harry Howle III
Mayor

Approved as to form and legal sufficiency:

Wayne R. Coment
City Attorney

Approved as conforming to municipal policy:

James R. O'Connor
City Manager

Approved as to technical requirements:

Ericson W. Menger
Airport Director

VERO BEACH
REGIONAL AIRPORT

Minimum Standards for Aeronautical Services

Vero Beach Regional Airport • 3400 Cherokee Drive • Vero Beach, FL 32960

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PREAMBLE

The mission of the Vero Beach Regional Airport is to provide safe and efficient general aviation facilities and associated services to both commercial and non-commercial users, while operating in harmony with the community's quality of life goals.

Pursuant to **FAA AIRPORT COMPLIANCE MANUAL - Order No. 5190-6B, dated September 30, 2009**, the City, as sponsor of a federally obligated Airport, shall make the opportunity to engage in commercial aeronautical services available to any person, firm, or corporation that meets and complies with reasonable standards established by the City. In exchange for this opportunity, an Operator engaged in commercial aeronautical services on the Airport agrees to comply with the Minimum Standards set forth in this document.

These Minimum Standards are intended to be reasonable and relevant to the aeronautical services conducted at the Airport. They protect Airport users from unauthorized and unlicensed products and services, maintain and enhance the availability of an adequate level of quality services for all Airport users, promote the orderly development of Airport land, promote safety in all Airport activities, and ensure efficiency of operations. They outline threshold entry requirements for establishing new aeronautical service businesses, create an environment that promotes fair competition among aeronautical businesses located at the Airport, and establish minimum licensing and insurance requirements for all aeronautical service providers operating on the Airport.

These Minimum Standards shall be applied objectively and uniformly to all similarly situated authorized commercial aeronautical services being provided to the public.

INTRODUCTION

Prudent and proper Airport administration requires that standards be adopted to establish the minimum acceptable qualifications of participants, level and quality of service, and other conditions which will be required of those proposing to conduct commercial aeronautical services at Vero Beach Regional Airport. Setting reasonable standards for those proposing to conduct commercial aeronautical services on a public Airport relates to the public interest and provides protection from irresponsible, unsafe, or inadequate service. The adoption and enforcement of such Minimum Standards ensures that those individuals, or entities, engaged in commercial aeronautical services are reasonably fit, willing, and able to discharge both its service obligations to its patrons and its economic obligations to the Airport community and protects established commercial enterprises, aviation users, and the public.

The City of Vero Beach, owner and operator of the Vero Beach Regional Airport, hereby adopts these Minimum Standards by Resolution. The goal of the Minimum Standards is to provide the threshold entry and operation requirements (qualifications, levels of service, and facilities) for those wishing to engage in, or to provide commercial aeronautical goods and services to the public and to ensure that those who have undertaken to provide services, as approved, are not exposed to unfair or irresponsible competition. The Federal Aviation Administration (FAA) strongly encourages, but does not require, an Airport sponsor to develop and implement a minimum standards program.

These Minimum Standards provide for the minimum levels of service, facilities, and staffing that must be met by the prospective commercial aeronautical service provider. The uniform application of these standards relates primarily to the public interest by discouraging substandard entrepreneurs and mandating insurance coverage levels, thereby protecting the Airport, Airport patrons, and established aeronautical services.

A Minimum Standards waiver may be granted by the Airport, in certain cases, to prevent discrimination and foster equal opportunity for business at the Airport.

APPLICABILITY

These Minimum Standards shall apply to any new agreement, lease, or any amendment to any existing agreement relating to the occupancy or use of Airport aeronautical land or improvements for commercial aeronautical services.

Operators currently conducting commercial aeronautical services without a written agreement with the City will have six (6) months from the date of adoption of these Minimum Standards to come into compliance.

Subject to all applicable Federal, State, and local statutes, ordinances, regulations, rules, orders, permits, and Grant Agreements between the City and the FAA and Florida Department of Transportation (FDOT), no person shall use the Airport, or any portion thereof, or any of its improvements or facilities, as a primary base for operations to engage in, or to deliver aeronautical services, who has not first obtained the written consent and required approval, or lease for such use, from the City and entered into such written leases or subleases and other agreements as may be required by the City.

1. To the extent that any provision of these Minimum Standards is in conflict with any lease agreement now or hereafter approved by the City, the provisions of the lease agreement shall prevail.

2. In the event of conflict between these Minimum Standards and any federal, state, or local regulation or ordinance, the regulation or ordinance shall prevail.

3. All units of measurement are provided in Standard English Units. Gross square feet of a building encompasses the total footprint of the building and includes mechanical rooms, toilets, stairs and halls. Square footage of apron or parking space is measured from edge to edge of the prepared surface, plus all surrounding area required for setbacks, green space, stormwater management, utilities, or other necessary development elements.

4. Any activities for which there are no specific Minimum Standards established will be addressed by the Airport on a case-by-case basis and set forth in such Operators' written lease, or other agreement with the City.

Resolution 2677, Minimum Standards, enacted by City Council decision on April 20, 1976 provided the following FBO categories:

Category "A" – Sale of Aviation Petroleum Products and Ramp Service
Category "B" – Flight Instruction and Aircraft Rental
Category "C" – Aircraft Charter and Taxi
Category "D" – Aircraft Sales
Category "E" – Aircraft, Engine, Propeller and Accessory Maintenance
Category "F" – Radio and Instrument
Category "G" – Complete Fixed Base Operators

These FBO Categories are superseded by these Minimum Standards, as approved by Vero Beach City Council.

DEFINITIONS

Terms used in these Minimum Standards are defined below. Words relating to aeronautical practices, processes and equipment will be construed according to their general usage in the aviation industry unless a different meaning is apparent from the context or specifically defined otherwise herein. All other words will be construed according to their common literal meaning.

AERONAUTICAL SERVICE - Any service which involves, makes possible or is required for the operation of aircraft, or which contributes to or is required for the safety of aircraft operations commonly conducted on the Airport by a person or business entity who has a lease or agreement from the Airport to provide such services.

AIR OPERATIONS AREA (AOA) - That portion of the Airport used or intended to be used for landing, takeoff or surface maneuvering of aircraft including the hangar and aircraft parking aprons.

AIRPORT – Vero Beach Regional Airport (KVRB).

APRON - Those areas of the Airport within the AOA designated for the loading, unloading, servicing, or parking of aircraft.

CITY - The City of Vero Beach, Florida, existing under the laws of the State of Florida. When City has a capitalized first letter, it is referring to the City of Vero Beach and its vested authority.

COMMERCIAL ACTIVITY - The exchange, trading, buying, hiring or selling of goods, services or property of any kind, or any revenue producing activity on the Airport.

ENTERPRISE FUND DEPARTMENT - A specifically defined department of a governmental entity which is managed in a manner similar to private business enterprises, where it is intended that the department account for costs of providing goods and services to the general public on a continuing basis, financed primarily through user charges, or, where the governmental body has decided that periodic determination of revenues earned, expenses incurred, or net income is appropriate for capital maintenance, public policy, management control, accountability, or other relevant purposes.

FEDERAL AVIATION ADMINISTRATION (FAA) - The federal aviation agency established by the Federal Aviation Act of 1958, as amended, and re-established in 1967 under the Department of Transportation.

FEDERAL AVIATION REGULATION (FAR) – Rules prescribed by the FAA governing all aviation activities in the United States found in-Title 14 of the Code of Federal Regulation.

FIXED BASE OPERATOR (FBO) - An Operator engaged in the business of providing commercial aeronautical services to Airport users. An FBO is the only type of Operator authorized to sell Fuel.

FUEL - Aviation petroleum products used to operate piston or jet turbine engines.

FUELING OPERATIONS - Dispensing of aviation fuel directly into aircraft or dispensing the same from a separate medium such as a fuel truck or self-fueling facility.

MAINTENANCE - Inspection, overhaul, repair, preservation, and replacement of parts of an aircraft, excluding preventive maintenance.

MINIMUM STANDARDS - The qualifications which are established as the minimum requirements to be met as a condition for privilege to conduct an aeronautical service at Vero Beach Regional Airport.

NFPA - National Fire Protection Association.

NOTAM - Notice to Airmen published by the FAA.

OPERATOR - A person or persons, firm, company, joint venture, partnership or corporation engaging in any commercial aeronautical service on the Airport. An Operator may be classified as either a Fixed Base Operator (FBO) or a Specialized Aeronautical Services Operator (SASO).

POLICY – As set forth by Vero Beach City Council resolution, is a guiding principle or plan which Airport Staff utilizes in managing all public matters involving property and operations.

SPECIALIZED AERONAUTICAL SERVICES OPERATOR (SASO) - An Operator authorized to provide up to three (3) commercial aeronautical services to Airport users. Specialized Aeronautical Services may include flight instruction, aircraft sales, charter services, avionics or engine/aircraft repair, aerial photography, aerial tours, and other aviation business not selling aviation fuel.

SELF-FUELING - Fueling of an aircraft by the aircraft owner, their employees, or the pilot, using their own pumps and equipment.

SELF-SERVICE FUELING - Dispensing of fuel by an aircraft owner, their employees, or a pilot into an aircraft from a pump installed and maintained by an FBO for that purpose. A self-service fueling facility is for public use.

Tenant – Individuals or business entities leasing space or land at the airport for private non-commercial use.

THROUGH-THE-FENCE OPERATION - Use of Airport property by any entity or business offering an aeronautical service or engaged in an aeronautical service on and adjacent to, or by aircraft based on land adjacent to, but not part of Airport property.

ARTICLE 1

GENERAL STANDARDS

Section 1 Overview

The City of Vero Beach, Florida, being responsible for ownership, operations, and the administration of the Vero Beach Regional Airport does hereby adopt and establish Minimum Standards governing the orderly development and operations of qualified commercial aeronautical service providers.

a. The Airport is a public-use, FAA Part 139 certificated general aviation Airport. The five-member Vero Beach City Council acts as the governing authority with the Airport operating as an Enterprise Fund Department within the City government. The daily management of the Airport is under the direction of the Airport Director. The Vero Beach City Council and Airport Commission have reviewed and approved these Minimum Standards.

b. The Vero Beach City Council has accepted certain responsibilities and obligations to operate the Airport for the use and benefit of the public. It makes the Airport available for public use by applying reasonable terms, without unjust discrimination, for Airport users or those desiring to conduct aeronautical services at the Airport. Establishing these Minimum Standards provides to all entities who desire to conduct or engage in providing authorized commercial aeronautical services at the Airport, the basic requirements to conduct such activities without exclusive right or infringing on the abilities of others to engage in similar activities. The Airport is authorized to assess fees and charges for conducting, carrying on, or engaging in commercial aeronautical services as described in these Minimum Standards. The Airport fees and charges are established and revised as necessary to make the Airport as financially self-sustaining as possible and sufficient to cover Airport costs.

c. These Minimum Standards establish the threshold entry requirements for those wishing to provide commercial aeronautical services to the public and to ensure that those who have undertaken to provide commercial aeronautical services are treated fairly.

Section 2 Amendments

Amendments to the Minimum Standards may be proposed at any time. A recommended change shall be forwarded, in writing, to the Airport Director. The Airport Director will review the proposed amendment in coordination with City staff and, if acceptable, present the amendment to the Airport Commission for a recommendation to the City Manager. The City Manager will review the proposed amendment for presentation to the City Council for action (acceptance, rejection, or revision). Copies of the proposed amendment will be available for review in the Airport Director's Office during regular business hours until final action of the City Council is complete. A copy of the proposed amendment will be sent to each affected commercial aviation tenant or authorized commercial aeronautical service provider on the Airport prior to presentation to the Airport Commission. A comment period of not less than 30 calendar days from the scheduled date of presentation to City Council will be allowed. Comments must be submitted, in writing, to the Airport Director within the comment period. If significant comments are

received, a public meeting may be held by the Vero Beach Airport Commission in order to advise the City Council on the proposed amendment. All comments will be considered by appropriate City staff, Airport Commission, City Manager, and the City Council. After considering the proposed amendment, comments, and recommendation of the Airport Commission, the City Council will vote for approval or disapproval. If the amendment is approved by the City Council, City staff will incorporate the amendment into the Minimum Standards and send a copy to all affected parties on the Airport. Approved amendments will become effective immediately upon approval by the City Council.

Section 3 Existing Tenants and Operators

With regards to an existing lease, sublease, or agreement, all conditions not meeting these Minimum Standards shall be considered nonconforming. All such non-conforming conditions shall be brought into conformance upon any of the following triggering events: changes to an existing lease, sublease, or agreement, including amendment, addendum, assignment, renewal, extension, expiration, or majority ownership change of fifty-one percent (51%) or greater.

Section 4 Waivers or Modifications

Subject to the Airport Deed Restrictions, Grant Assurances, Airport Compliance Manual, and other applicable FAA rules and regulations, situations may arise where it may be that these Minimum Standards might be waived or modified, in part, by the following authorities as outlined below.

a. The Airport Director may waive or modify any portion of these Minimum Standards for the benefit of any governmental agency performing public services, law enforcement, fire protection, or emergency response operations.

b. The City Manager may waive or modify any portion of these Minimum Standards when it is determined that such waiver or modification is in the best interest of the public and will not result in preferential treatment or discrimination against other commercial aviation tenants or authorized commercial aeronautical service providers at the Airport.

c. Many types of commercial aeronautical services may exist which are too varied or specialized to reasonably permit the establishment of specific Minimum Standards for each activity. When services are proposed which do not fall within the categories in this document, minimum standards will be developed on a case-by-case basis, taking into consideration the desires of the Operator and the needs of the City, or an amendment may be proposed as set forth in Section 2 above.

d. In the interest of the highest and best use of Airport property, the City may make changes to these Minimum Standards, as well as any other policy concerning the future development of the Airport. It is the City's intent to solicit comments from and communicate with all FBOs, SASOs and other authorized businesses located at the Airport with respect to these matters.

Section 5 Rights and Responsibilities – Operator

Notwithstanding anything to the contrary contained herein, the following rights, privileges and duties are hereby conferred and imposed upon individual users of the Airport facilities:

a. Each Operator shall comply with all applicable requirements, regulations, and standards for licensing and certification for the type of business activities being conducted. If any changes in licensing or certification status occur, the Operator shall immediately notify the Airport.

b. It shall be the duty of each Operator at the Airport to fully inform themselves of, and to keep current on, all federal, state, and local aviation regulations and standards and to completely and promptly comply therewith.

c. Nothing contained herein shall restrict or limit the right of Operators or their employees to engage in commercial aeronautical services allowed by the FAA and these Minimum Standards. However, all such commercial aeronautical services shall be performed strictly in accordance with federal, state, and local regulations, circulars, airworthiness directives and requirements, and such maintenance and repairs shall be conducted within areas designated for owner maintenance or by authorized repair facilities on the airfield.

Section 6 Rights and Responsibilities – Airport Owner

a. The City of Vero Beach, as owner and operator of the Vero Beach Regional Airport, has the responsibility to adhere to all federal, state, and local laws, and all contracts it has entered into including, but not limited to, all Federal and State Grant Agreements with the FAA and FDOT for funding of improvements to the Airport. The City reserves the right to make changes and modifications to these Minimum Standards as conditions may require.

b. In addition to all other rights and remedies provided in these Minimum Standards, the City shall have any and all other rights and remedies at law or in equity, including the equitable remedy of injunction, to enforce these Minimum Standards and to obtain compliance herewith.

c. The Airport shall have the right at any time to inspect all Airport premises, together with all structures or improvements, aircraft, equipment, licenses, registrations, and all applicable records.

Section 7 Subordination

a. **War or National Emergency**

During time of war or national emergency, the City shall have the right to lease the Airport, or the landing area, or any part thereof, to the United States Government for military use. Any authority, or lease agreement granted to an Airport tenant or subtenant shall be subordinate to such government lease and, insofar as they are inconsistent, the government lease shall prevail.

b. **All Leases Subordinate to Government Conditions**

Any lease, or agreement entered into between the City and any tenant or subtenant shall be subject and subordinate to the provisions of any existing or future agreement between the City and the United States Government, relative to the operation or maintenance of the Airport, the execution of which has been or may be required as a condition precedent to the expenditure of Federal funds for the development of the Airport.

Section 8 **Airport Leasing Policy**

The Airport Leasing Policy (Resolution 2015-30, as amended) has been designed to simplify and expedite the entire leasing process, and to ensure that each prospective tenant receives fair and equitable treatment. Airport policy does not allow a prospective tenant to secure a "right of first refusal," nor will the Airport remove any property from the market for any period of time for the purpose of future lease negotiations. Impartial consideration will be given to all parties who express a current interest in leasing Airport property.

Section 9 **Repairs, Restoration, Replacement**

Nothing contained in these Minimum Standards shall be construed to require the City to maintain, repair, restore or replace any structure, improvement or facility which is damaged or destroyed. The City will continuously operate the Airport in accordance with Grant Assurances provided to the Federal Aviation Administration in exchange for Airport Improvement Program grants.

Airport Improvement Program (AIP) grants, term used by the FAA for planned and programmed grant funded projects for any Public Use airport.

ARTICLE 2

GENERAL REQUIREMENTS

Section 1 **Personnel and Training**

a. Tenants/Operators shall ensure that an adequate number of qualified, authorized and where applicable, licensed employees are on duty to provide a level of service consistent with these Minimum Standards.

b. All non-management personnel in the AOA shall be suitably uniformed with the name of the company prominently displayed.

c. All personnel within the established AOA shall display Airport identification media in compliance with the current requirements of the Airport Security Program.

d. Each Operator shall establish a written program to ensure that all employees are thoroughly trained and qualified to perform the tasks to which they are assigned. The training program shall contain detailed instruction in proper operating procedures for each job classification.

e. The Airport requires certain Tenant and/or Operator employees to complete training and maintain proficiency in several areas including, but not limited to: Ground Vehicle Operations and Runway Safety, Aviation Fuel Handling and Fire Safety, and Airport Security. It shall be the duty of each Operator to:

1. Ensure that their employees are current in their training, as applicable;
2. Notify the Airport when employee training is needed;
3. Maintain documentation of required training, and;
4. Provide documentation of required training to the Airport.

Section 2 **Airport Security**

Tenants and Operators shall ensure that they and their employees, and facilities (as applicable) are in compliance with the current requirements of the Airport Security Program. Such requirements include, but are not limited to:

a. AOA access control;

b. AOA escort procedures;

c. Monitoring for security breaches or threats, and;

d. Proper display of identification media.

Section 3 **General FBO and SASO Requirements**

a. All FBOs and SASOs authorized to provide commercial aeronautical services at the Airport shall conduct those operations for the convenience of the public and to promote aviation.

b. No Operator may conduct business as an FBO or SASO at the Vero Beach Regional Airport without a written agreement. The agreement may be in the form of a lease, or consent to sublease. An FBO or SASO shall accept, comply with, and conduct its business operations in accordance with the terms and conditions of the agreement, these Minimum Standards, and rules and regulations adopted or amended from time to time by the City of Vero Beach, Florida, owner of the Vero Beach Regional Airport.

c. Each Operator shall make prior arrangements for a sufficient amount of land, or building space, from the City, an existing FBO, SASO, or an existing hangar owner, to conduct the type of business for which the Operator has been approved by the City. Any proposed new construction or development must comply with Article 11, Minimum Construction and Design Standards, of these Minimum Standards

d. Each Operator shall provide paved access to the Airport's runway and taxiway system. If paved access must be constructed, it shall be done in compliance with the criteria described in Article 11, Minimum Construction and Design Standards, of these Minimum Standards.

e. Minimum size requirements for hangar, office, and apron space, described in this document, are not cumulative for those operators proposing to offer aeronautical services to the public in more than one SASO category.

f. The Operator shall conduct its business operations, including the parking and storing of aircraft, strictly within the boundaries of their leased property, unless alternate arrangements are made with another Operator. Operations shall not in any way interfere with the operations of other FBOs, SASOs, other businesses operating on the Airport, or the use of the Airport by the general public. The Operator shall not utilize any common use areas for commercial purposes, except as authorized in writing by the Airport.

g. The Operator shall conduct aeronautical services on a fair and non-discriminatory basis to all people and entities and shall charge fair, reasonable, and non-discriminatory prices for each product or unit of service.

h. All Operators shall conduct business in a safe and professional manner consistent with the highest degree of care and skill exercised by existing FBOs and SASOs providing comparable products, services and activities from similar Airports in like markets.

i. SASO categories include:

1. Aircraft Repair and Maintenance as further described in Article 4 and includes both Airframe and Powerplant repair and maintenance and Aircraft Component repair and maintenance.
2. Aircraft Rental as further described in Article 5.
3. Flight Training as further described in Article 6.
4. Aircraft Sales as further described in Article 7.
5. Aircraft Charter and Taxi Operations as further described in Article 8.
6. Other Services as dictated by market conditions.

Section 4 **Insurance.** Tenants, Operators, and other Airport users must, as a condition of their lease or other written agreement, obtain and maintain insurance coverage as required by the lease or other written agreement, and name the City of Vero Beach as additional insured. Business owners are encouraged to

purchase additional policy types and limits suited for their specific operation at Vero Beach Regional Airport.

Annually, each tenant must provide the Airport with an updated copy of their insurance policy, insurance certificate and the endorsement naming the City as an additional insured. Questions should be directed to the Airport's Property and Business Administrator regarding insurance requirements, (772) 978-4930, ext 102.

ARTICLE 3

FIXED BASE OPERATOR (FBO)

Section 1 Statement of Concept

With exception of self-fueling operations, only an FBO authorized to conduct business on the Airport shall provide aircraft fueling to Airport users. In addition to aircraft fueling, an FBO may provide any number of aeronautical services and including, but not limited to SASO categories listed in Article 2, section 2.i.

Section 2 Minimum Standards for FBO

Except as otherwise provided in any agreement between the FBO and the City, an FBO offering aeronautical services to the general public shall comply with the following minimum standards unless a waiver is granted by the City:

2.1 Facilities

The Operator shall lease from the City or another existing Operator on the Airport, sufficient land or building space to provide:

a. A building of not less than three thousand (3,000) square feet of properly lighted, air conditioned floor space for the purposes of providing all amenities typically found at comparable FBOs in similar markets or called for by market conditions. Total square footage can be cumulative, among all FBO buildings.

b. A hangar facility of a minimum of twelve thousand (12,000) square feet of properly lighted space to perform work, aircraft storage, and parts storage. Total hangar square footage can be cumulative, among all FBO hangars.

c. A paved Apron of not less than fifty thousand (50,000) square feet, to provide transient aircraft parking and tie-downs for a minimum of ten (10) aircraft.

d. Tie-down facilities for safe storage of based and transient aircraft.

2.2 Aviation Fuels and Oil Sales

Except as otherwise provided in any agreement between the FBO and the City, an FBO shall be required to provide the following services and equipment:

a. Provide aircraft fueling and storage facilities of not less than 10,000 gallons.

b. Minimum types of aviation fuel offered shall be as required by market conditions.

c. An adequate amount of aviation fuel is to be stored as to provide efficient, uninterrupted supply.

d. An adequate inventory of generally accepted grades of aviation engine oil and lubricants.

e. All fuel dispensing equipment shall be equipped with certified metering equipment, filters, and bonding equipment and shall meet all applicable federal, state, local, NFPA, and FAA Advisory Circular requirements for each type of fuel dispensed.

f. The storage, transportation, and dispensing of fuel shall be done in strictest accordance with federal, state, and local regulations, Airport Rules and Regulations, applicable NFPA Codes and the Airport Certification Manual.

g. FBO's shall ensure that their personnel who handle aviation fuel are trained in compliance with the requirements of FAR 139.321, the Airport Certification Manual, and the Airport's Aviation Fuel Handling and Fire Safety Standards.

h. The FBO shall establish and carry out all operations in accordance with procedures sufficient to provide the services required, and safely store, dispense and handle fuel, lubricants, and oxygen on the Airport.

i. If a written request is received, the Airport Director may grant authorization for self-service fueling operations to an FBO if Airport activity, market demand, and safety criteria justify such an operation. An FBO may not install self-service fueling equipment without providing full service fueling service to the public. The fueling facility may or may not be attended by the FBO that owns and operates the equipment.

2.3 Subcontracting Services and Restrictions

The FBO may subcontract~~,~~ or use~~,~~ third party operators to provide any additional activities identified in Article 3, Section 1, provided that such subcontractor or third party operators meets the requirements of these Minimum Standards, is approved by the Airport in writing, and operates from the Fixed Base Operator's premises.

2.4 Additional Required Services

An FBO shall also provide the following services:

a. Service equipment necessary to properly provide support for aircraft including, but not limited to: fire extinguishers, aircraft tugs, ground power starter, auxiliary power units, and lavatory service.

b. Emergency service to disabled aircraft on the Airport including towing or transporting disabled aircraft to the FBO's premises at the request of the owner or pilot of the disabled aircraft or the Airport. Movement of any disabled aircraft shall be at the expense of the aircraft owner. The City bears no liability in moving an aircraft.

c. Oxygen dispensing and servicing for low pressure and high pressure gaseous oxygen. Only Aviator's Breathing Oxygen quality oxygen shall be offered.

ARTICLE 4

AIRCRAFT REPAIR AND MAINTENANCE

Section 1 Statement of Concept

An Aircraft Repair and Maintenance Operator provides Airframe and Powerplant repair and maintenance and Aircraft Component repair and maintenance which includes airframe, engine, component, and accessory repairs and maintenance or a combination thereof on aircraft. This SASO category shall also include the sale of aircraft parts, components, and accessories.

Section 2 Minimum Standards

An Operator in this category, in addition to the services normally associated with repair and maintenance, shall provide or have access to necessary facilities, equipment, expertise, and personnel to assist with the removal of disable aircraft from the public landing area when requested by the aircraft owner or the Airport unless otherwise provided in an agreement.

2.1 Facilities

The Operator shall lease from the City or another existing Operator on the Airport, sufficient land or building space to provide:

a. A building of not less than one thousand (1,000) square feet of properly lighted, air conditioned floor space for the purposes of providing all amenities typically found at comparable airports or called for by market conditions.

b. A hangar of not less than five thousand five thousand (5,000) square feet to conduct airframe and powerplant repairs and maintenance for general aviation aircraft.

c. A paved apron of not less than five thousand (5,000) square feet.

ARTICLE 5

AIRCRAFT RENTAL

Section 1 Statement of Concept

An Aircraft Rental Operator engages in the rental or lease of aircraft to the public.

Section 2 Minimum Standards

An Operator in this category shall at all times maintain a minimum of one (1) fixed wing or one (1) rotary wing aircraft, ready to fly, and under the control of, the Operator for rent by the general public.

2.1 Facilities

The Operator shall lease from the City or another existing Operator on the Airport, sufficient land or building space to provide:

a. A building of not less than one thousand (1,000) square feet of properly lighted, air conditioned floor space for the purposes of providing all amenities typically found at comparable airports or called for by market conditions.

b. A hangar of not less than five thousand (5,000) square feet.

c. A paved apron of not less than five thousand (5,000) square feet.

ARTICLE 6

FLIGHT TRAINING

Section 1 **Statement of Concept**

A Flight Training Operator engages in the instruction of students in the principles of piloting various types of aircraft. Flight training can be accomplished through utilization of actual aircraft or flight simulators. Flight training also encompasses varying ground school studies to address the theoretical aspects of aviation. The combination of the theoretical studies in conjunction with the practical exercises must fulfill the requirements established by the FAA leading to successful written/oral examination and a flight check ride for the category or categories of pilot certificates or ratings involved.

Section 2 **Minimum Standards**

Except as otherwise provided by an agreement between the Operator and the City, an Operator offering flight training services to the general public shall:

a. Provide and at all times maintain a minimum of one (1) aircraft, or one (1) flight simulator, owned or leased by, and under the control of, the Operator. Aircraft and simulators shall be suitable for the type of training being offered.

b. Ensure that all students operating training aircraft obtained from the Operator have an appropriate and current FAA pilot's license and medical certificate, or the student is under the direct supervision of a qualified instructor and is qualified to safely operate the aircraft.

c. Operators shall comply with the Transportation Security Administration requirements of the Consolidated Security, Disaster Assistance, and Continuing Appropriations Act, 2009 (Appropriations Act of 2009), which amends 6 U.S.C. 469 and authorizes TSA to establish a process to determine that an alien who takes a recurrent flight training course is not a risk to aviation or national security, and to impose reasonable fees for this process. Flight training providers must conduct background checks for all aliens and other designated individuals seeking flight instruction (''candidates'') from FAA-certificated flight training providers. Through the information collected, TSA will determine whether a candidate is a threat to aviation or national security, and thus prohibited from receiving flight training or recurrent training.

d. Operators are required to conduct a security awareness program for their employees, and to maintain records associated with this training. See Article 2, Section 2.

e. Under no circumstances shall an Operator offer instruction or provide access to aircraft by a student if the TSA notifies the facility that the student poses an unacceptable threat to aviation or national security.

2.1 Facilities

The Operator shall lease from the City or another existing Operator on the Airport, sufficient land or building space to provide:

a. A building of not less than three thousand (3,000) square feet of properly lighted, air conditioned commercial space for the purposes of providing all classrooms, training, flight planning area, and public restrooms typically found at comparable airports or called for by market conditions.

b. A hangar of not less than five thousand (5,000) square feet.

c. A paved apron of not less than five thousand (5,000) square feet.

ARTICLE 7

AIRCRAFT SALES

Section 1 **Statement of Concept**

An Aircraft Sales Operator engages in the purchasing and selling of new or used aircraft through various methods, including matching potential customers with an aircraft (brokering), assisting a customer in the purchase or sale of an aircraft, or purchasing used aircraft and marketing them to potential purchasers.

Section 2 **Minimum Standards**

An Operator offering aircraft sales to the general public shall provide adequate facilities or arrangements for all aircraft sales operations as dictated by market conditions unless otherwise provided by agreement with the City.

Adequate facilities shall at a minimum include the Operator leasing from the City or another existing Operator on the Airport, sufficient land or building space to provide:

a. A building of not less than one thousand (1,000) square feet of properly lighted, air conditioned floor space for the purposes of providing all amenities typically found at comparable markets or called for by market conditions.

b. A hangar of not less than five thousand (5,000) square feet.

c. A paved apron of not less than five thousand (5,000) square feet.

ARTICLE 8

AIRCRAFT CHARTER AND TAXI

Section 1 Statement of Concept

An Aircraft Charter or Taxi Operator is engaged in the business of providing air transportation (persons or property) to the general public for hire, on an unscheduled or scheduled basis, under FAR Part 135. Aircraft Charter Operations include Air Ambulance Operations and Aircraft Management Operations. An Aircraft Management Operator is a commercial operator engaged in the business of providing aircraft flight dispatch, flight crews or aircraft maintenance coordination to the public and is included in Air Charter Operations.

Section 2 Minimum Standards

Except as otherwise provided in an agreement between the Operator and the City, an Operator offering aircraft charter or air taxi service to the general public shall:

a. Provide to the Airport proof of FAR Part 135 certification.

b. Provide and at all times maintain a minimum of one (1) aircraft owned or leased by, and under the control of, the Operator.

2.1 Facilities

The Operator shall lease from the City or another existing Operator on the Airport, sufficient land or building space to provide:

a. A building of not less than one thousand (1,000) square feet of properly lighted, air conditioned floor space for the purposes of providing all amenities typically found at comparable markets or called for by market conditions.

b. A hangar of not less than five thousand (5,000) square feet.

c. A paved apron of not less than five thousand (5,000) square feet.

ARTICLE 9

THROUGH-THE-FENCE OPERATIONS

Section 1 Statement of Concept

Requests for a Through-The-Fence Operation, as defined in this document, shall be considered and evaluated by the City on a case-by-case basis. Factors to be considered by the City in granting permission for this type of operation include, but are not limited to, the safety and security of the Airport, the amount of public demand for the type of aeronautical operation or business being proposed (if applicable), equitable compensation to the City for the use of Airport property and facilities, and the best interests of the Airport, the Airport users, and the local community. Prior to allowing access to the AOA, a written agreement describing the terms and conditions under which a Through-the-Fence Operation will be permitted shall be executed by the City and the Operator, and approved by the FAA.

Section 2 Obligations

As stated by the FAA/FDOT Advisory Circular for the establishment of minimum standards for commercial aeronautical services, AC No: 150/5190-7:

a. **No Obligation to Permit Through-the-Fence.** The obligation to make an Airport available for the use and benefit of the public does not require the City to permit ground access by aircraft from adjacent property. Through-the-fence arrangements can place an encumbrance upon the Airport property and reduce the Airport's ability to meet its Federal obligations. As a general principle, the FAA does not support agreements that grant access to the public landing area by aircraft stored and serviced off-site on adjacent property.

b. **Option to grant through-the-fence access.** The Airport may grant through-the-fence access on a case-by-case basis, but only when the Airport retains its ability to meet its Federal obligations. To minimize the possibility of conflict between a through-the-fence agreement and the Airport's ability to meet its Federal obligations, the City must retain the legal right to require the off-site property owner or party granted access to the Airport to conform, in all respects, to the requirements of any existing or proposed grant agreement or Federal property conveyance obligation. This includes requirements to ensure operating safety and equitable compensation for use of the Airport. Special safety and operational requirements shall be incorporated into any access agreement to ensure that the through-the-fence access does not complicate the control of vehicular and aircraft traffic or compromise the security of the AOA.

c. **Access Agreement.** Any through-the-fence access shall be subject to a written agreement between the City and the party granted access. The access agreement shall specify what specific rights of access are granted; payment provisions that provide, at a minimum, parity with similarly situated on-Airport tenants and equitable compensation for the use of the Airport; expiration date; default and termination provisions; insurance and indemnity provisions; and a clear statement that the access agreement is subordinate to the grant assurances or Federal property conveyance obligations and that the sponsor shall have the express right to amend or terminate the access agreement to ensure continued compliance

with all grant assurances and Federal property conveyance obligations. The access agreement shall have a fixed contract period and the City is under no obligation to accept a proposed assignment or sale of the access agreement by one party to another. The City expressly prohibits the sale or assignment of the access agreement.

ARTICLE 10

NON-COMMERCIAL HANGAR

Section 1 **Statement of Concept**

This section provides guidance for those individuals or business entities that desire to lease property from the City to construct a hangar for the non-commercial storage of their own aircraft. The following minimum standards shall apply.

Section 2 **Minimum Standards**

The land leased by the City to the Tenant shall be the minimum area necessary to construct the following facilities:

a. A hangar of not less than three thousand five hundred (3,500) square feet, with separate office/storage space of not less than one thousand (1,000) square feet which is air conditioned and properly lighted.

b. A paved apron of not less than three thousand five hundred (3,500) square feet.

Section 3 **Permitted Uses**

Lessee shall use the leased premises solely for storage and servicing of their own aircraft. No commercial activity of any kind shall be permitted on the premises unless authorized in the lease agreement with the City.

ARTICLE 11

MINIMUM CONSTRUCTION AND DESIGN STANDARDS

Section 1 Statement of Concept

The intent of these Design Standards is to ensure consistent, high quality development and to protect and enhance the investment of all those locating within the Airport. These standards provide a basis for directing and evaluating the planning and architectural design of improvements to each parcel.

Section 2 Minimum Standards

Buildings may not be constructed on Airport property, unless approved by the Airport for conformance in each of the following areas:

a. Compliance with City site plan requirements, and all applicable building and zoning codes.

b. Consistency with the current Airport Layout Plan.

c. Compliance with all applicable building restriction lines and height restrictions.

d. Avoid interference with any Airport or FAA radio or guidance equipment due to location or type of structural material.

e. Access is provided to the proposed building, including any required easements, roads, or taxiways.

f. All paved access to the Airport's runway and taxiway system, intended for aircraft use, must be in compliance with all applicable FAA/FDOT airfield pavement design and construction standards.

g. Obtain an approved lease agreement with the City or an approved sublease with an existing authorized tenant of the Airport. Such lease to include all areas deemed necessary to the normal use of the building and all aeronautical functions necessary with the normal operations of the business. This provision may be waived, in whole or in part, by the Airport to facilitate Airport operations or access. Requests for waiver must be in writing, shall state the reason for the waiver and shall state in detail the mitigating measures to be taken with respect to potential adverse impacts that may arise from granting the requested waiver.

h. All newly constructed hangars must include plans for apron space directly in front of the hangar that is equal to, or exceeds, the square footage of the hangar itself in order to accommodate the maneuvering of aircraft in and out of the hangar.

i. Provide adequate paved automobile parking facilities for customers and employees as provided for by State, and local laws, ordinances and other requirements.

Section 3 Additional Requirements

These standards shall apply to all properties on the Airport, and are in addition to any other jurisdictional requirements.

Copies of all structural plans, site plans, and material specifications developed by a certified architect or engineer shall be provided to the Airport Director for review and approval and, upon approval, shall become the property of the City. Final colors and materials shall be as approved by the Airport Director,

Airport staff shall make frequent inspections during construction of any approved building. No changes to, or variations from, approved plans and specifications shall be permitted unless approved in writing by the Airport Director.

Construction of any approved structure or material component thereof, may not commence until the following documents or proofs thereof are provided to the Airport:

a. Contractor's Comprehensive General Liability Insurance and automobile Liability Insurance policies in an amount not less than that provided in Attachment "B".

b. Property insurance upon the entire work at the site to the full insurable value thereof. This insurance shall include the interest of the Lessee, the Contractor, and Subcontractors in the work and shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss or damage including, without duplication of coverage, theft, vandalism and malicious mischief.

c. Performance, Material and Labor Payment Bond payable to the City in an amount equal to the entire cost of the project. In addition, a one (1) year maintenance bond equal to ten percent (10%) of the amount of the Performance, Material and Labor Payment Bond shall be required upon substantial completion of the work.

d. Temporary buildings must be approved by the Airport Director in coordination with the Planning Director as to type, use, design and location on an individual basis for a specified term and that removal of temporary buildings shall be done by the Lessee or Licensee, at his expense, within fifteen days of the end of the approved term.

e. In the event of any failure on the part of any Lessee to comply with Airport requirements or any failure to complete a construction project according to the approved plans and specifications, or within a reasonable time as determined by the City, shall be cause for the City to revoke any ground lease with the Lessee of the project and require that the structure be removed from the Airport property. In addition to the foregoing remedies, the Airport and the City shall retain all other remedies provided by the lease or as provided by law.

Appendix A – Amendments

Amendment #	Date of Approval	Amendment Description

Appendix B – Quick Reference Guide - Minimum Space Requirement

Minimum Space Quick Reference Guide

	FBO	Aircraft Repair & Maintenance	Aircraft Rental	Flight Training	Aircraft Sales	Charter & Taxi	Non-Commercial Hangar
Building Office	*3,000 SF	1,000 SF	1,000 SF	3,000 SF	1,000 SF	1,000 SF	1,000 SF
Hangar	*12,000 SF	5,000 SF	5,000 SF	5,000 SF	5,000 SF	5,000 SF	3,500 SF
Paved Apron	50,000 SF	5,000 SF	5,000 SF	5,000 SF	5,000 SF	5,000 SF	3,500 SF

* Denotes space can be cumulative among all like FBO structures to meet the specific requirement.

APPENDIX D: NTSB INVESTIGATIVE EVENTS

TABLE D.1: NTSB INVESTIGATIVE REPORT SUMMARY

Aviation Accident Database and Synopses					
Event Date	Make/Model	Registration Number	NTSB Number	Event Severity	Probable Cause of Event
04/21/1982	Robinson R-22	N9033B	MIA82DA105	Nonfatal	Undetermined
04/12/1983	Cessna 150M	N8724U	MIA83LA116	Nonfatal	Loss of control
04/16/1984	Cessna 152	N89948	MIA84LA141	Nonfatal	Vehicle hit aircraft
06/18/1984	Cessna 172E	N5463T	MIA84LA187	Nonfatal	Loss of engine power
03/19/1985	Cessna 152	N69109	MIA85LA125	Nonfatal	Loss of control
04/16/1985	Piper PA38	N2428D	MIA85LA148	Nonfatal	Precautionary hard landing
05/31/1985	Piper Aztec PA23	N63845	MIA85IA182	Incident	Gear not extended
01/20/1986	Piper PA38	N2361D	MIA86LA061A	Nonfatal	On ground collision with aircraft
01/20/1986	Piper PA28R	N3745Q	MIA86LA061B	Nonfatal	On ground collision with aircraft
02/12/1986	Hughes 269C	N58275	MIA86LA074	Nonfatal	Tail rotor struck the ground
12/16/1986	Cessna 336	N1SN	MIA87LA050	Nonfatal	Loss of engine power
08/26/1987	Piper PA38	N2316D	MIA87FA234	Nonfatal	Loss of engine power
10/29/1987	Mooney M20F	N413HM	MIA88LA022	Nonfatal	Gear not extended
06/14/1988	Piper PA38	N2387T	MIA88FA191	Nonfatal	Loss of control
08/16/1988	Piper PA44	N2193V	MIA88IA255	Incident	Hard landing
10/05/1988	Hughes 269C	N8602F	MIA89FA004	Nonfatal	Rotor struck the ground
11/11/1988	Piper PA38	N2391G	MIA89IA028	Incident	Loss of control
07/23/1989	Mooney M22	N7738M	MIA89LA205	Nonfatal	Improper maintenance
03/02/1990	Hughes 300C	N58275	MIA90LA076	Nonfatal	Inadequate rotor RPM and gusty wind condition
11/29/1990	Cessna 172N	N733UC	MIA91LA038	Nonfatal	Hard landing
04/30/1991	Piper PA28	N150ER	MIA91LA131A	Nonfatal	On ground collision with aircraft
04/30/1991	Socata Tampico TB-9C	N2816D	MIA91LA131B	Nonfatal	On ground collision with aircraft
07/08/1991	Bell 206B	N333FC	MIA91LA229	Nonfatal	Hard landing
12/08/1991	Piper PA28	N9222J	MIA92LA043	Nonfatal	Loss of control
07/22/1993	Piper PA46	N888CD	MIA93LA161	Nonfatal	Overrun
05/28/1995	Cessna 182A	N4905D	MIA95LA139	Nonfatal	Loss of engine power
05/14/1997	Cessna 172	N9504H	MIA97LA165	Nonfatal	Loss of control
04/18/1998	Stewart 51	N51S	ATL98LA062	Nonfatal	Loss of engine power
07/09/1998	Cessna 150M	N9363U	ATL98LA095	Nonfatal	Loss of control
07/10/1998	Piper PA28R	N1493H	ATL98LA096	Nonfatal	Hard landing
08/13/1998	Piper PA44	N144JR	MIA98LA225	Nonfatal	Gear retraction on ground
04/14/1999	Piper PA44	N30397	MIA99LA128	Nonfatal	Airframe/component failure
04/28/1999	Cessna 210L	N3458H	MIA99FA142	Fatal	Loss of engine power

Aviation Accident Database and Synopses					
Event Date	**Make/Model**	**Registration Number**	**NTSB Number**	**Event Severity**	**Probable Cause of Event**
08/18/2000	Piper PA46	N4380S	ATL00LA084	Nonfatal	Loss of engine power
04/09/2001	Piper PA46	N262MM	MIA01FA117	Fatal	Unspecified problem resulting in airplane stalling
12/21/2001	Cessna 210D	N3776Y	ATL02LA019	Nonfatal	Loss of engine power
10/25/2002	Piper PA34	N92897	MIA03LA009	Nonfatal	Nose gear collapsed
07/18/2007	Cessna 152	N93574	NYC07CA169	Nonfatal	Directional control – nose over

Source: National Transportation Safety Board Aviation Accident Database and Synopses, Aviation Results (ntsb.gov), accessed October 17, 2022.

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APPENDIX E: AVIATION ACTIVITY FORECASTS APPROVAL LETTER

U.S. Department
of Transportation
**Federal Aviation
Administration**

Orlando Airports District Office
8427 Southpark Circle, Suite 524
Orlando, Florida 32819
Phone: (407) 487-7229
Fax: (407) 487-7135

July 21, 2023

Mr. Todd Scher
Director
Vero Beach Regional Airport
City of Vero Beach
3400 Cherokee Drive
PO Box 1389
Vero Beach, FL 32961-1389

Re: Master Plan/Aviation Demand Forecast
Vero Beach Regional Airport (VRB)
Vero Beach, FL

Dear Mr. Scher:

We have reviewed the Master Plan Forecast of Aeronautical Demand dated July 2023 and find it consistent with the 2022 Federal Aviation Administration (FAA) Terminal Area Forecast (TAF) following additional agency review. Based on this finding, the Vero Beach Regional Airport Preferred Master Plan Forecast is approved for use. We are coordinating the forecast for consideration when formulating the next FAA Terminal Area Forecast. Those development projects identified in the ongoing Master Plan Update must be justified at the time of grant application.

Should you have any questions, please feel free to contact me at (407) 487-7229.

Sincerely,

Stephen Wilson
Community Planner

Cc: FDOT, ESA, Hanson

APPENDIX F: FLORIDA MASTER SITE FILE REPORT

Manuscript Roster

Total=12

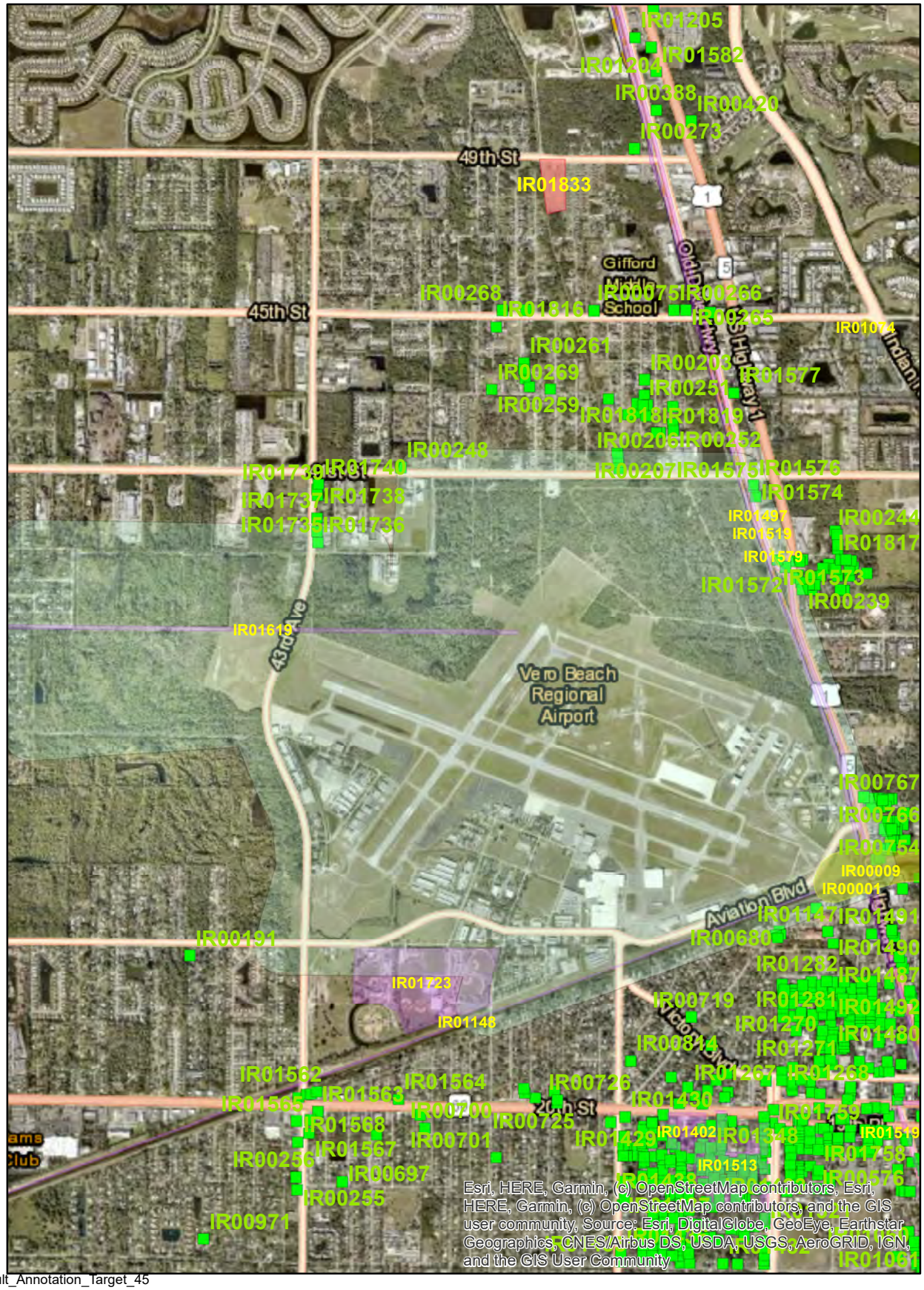
MS#	Title	Publication Information	Year
22439	A Cultural Resource Assessment Survey of the Proposed 43rd Avenue Sidewalk Improvements from 26th Street to Airport Drive West Indian River County, Florida	2015, Wallace, Jelane. A Cultural Resource Assessment Survey of the Proposed 43rd Avenue Sidewalk Improvements from 26th Street to Airport Drive West Indian River County, Florida. Panamerican Consultants, Inc., Lakeland, Florida	2015
25910	A Cultural Resource Assessment Survey of the Proposed 43rd Avenue Sidewalk Improvements from Airport Drive West ti 41st Street Indian River County, Florida	PanAmerican Consultants, Inc., prepared for G.K. Environmental, Inc.	2015
20946	A Cultural Resource Assessment Survey of the Proposed Old Dixie Highway Sidewalk Project Between 45th Street and 38th Lane in Vero Beach, Indian River County, Florida	2013, Wallace, Jelane, and Stacey Griffin. A Cultural Resource Assessment Survey of the Proposed Old Dixie Highway Sidewalk Project Between 45th Street and 38th Lane, In Indian River County, Florida, Panamerican Consultants, Inc., Lakeland, Florida	2013
20495	Cultural Resource Assessment Report for the All Aboard Florida Passenger Rail Project from Orlando to West Palm Beach	Janus Research, 1107 N. Ward Street, Tampa FL 33607	2013
18447	Cultural Resource Assessment Survey of State Road 5/US-1 from 37th Place to 45th Street, Indian River County, Florida	Janus Research, prepared for the Florida Department of Transportation, District 4	2011
14147	A Preliminary Archaeological Survey of the Main Canal Vortex Treatment System/Vero Site, Vero Beach, Florida	Thomas Penders & Associates, Titusville. Prepared for Public Works Department Stormwater Engineering Division, Government of Indian River County, Vero Beach	2005
14150	An Archeological and Historical Survey of the Proposed Indian River County Adminstration Complex, Vero Beach, Florida	Thomas Penders & Associates, Titusville. Prepared for Government of Indian River County, Vero Beach	2005
7312	An Archaeological and Historical Survey of the Act Vero Airport Tower Location in Indian River County, Florida	PANAMERICAN CONSULTANTS, INC., TAMPA. Submitted TO EPAC ENVIRONMENTAL SCIENCES, INC., POMPANO BEACH	2002
7420	An Archaeological and Historical Survey of the Proposed Vero Airport Tower Location in Indian River County, Florida	PANAMERICAN CONSULTANTS, INC., TAMPA. Submitted TO G.K. ENVIRONMENTAL, INC., VERO BEACH	2002
7396	An Archaeological and Historical Survey of the Proposed Dodger Town Tower Location in Indian River County, Florida	PANAMERICAN CONSULTANTS, INC., TAMPA. Submitted TO EPAC ENVIRONMENTAL SERVICES, INC., POMPANO BEACH	2001
2580	Historical resource assessment survey of the proposed bridge replacement on 27th Avenue over the Main Canal in Vero Beach, Florida	Florida Department of Transportation, Tallahassee.	1990
2670	Historic Properties Survey of the City of Vero Beach, Florida	Report submitted to the City of Vero Beach, FL, by Historical Property Associates, Inc., St. Augustine.	1990

AR=3
SS=32
CM=0
RG=5
BR=0
Total=40

Cultural Resource Roster

SiteID	Type	Site Name	Address	Additional Info	SHPO Eval	NR Status
IR00001	AR	VERO MAN	Fellsmere	Human Remains May Be Present	Eligible	
IR00009	AR	VERO LOCALITY	Vero Beach	Human Remains May Be Present	Eligible	
IR00204	SS	4115 28TH AVE	4115 28TH AVE, GIFFORD	c1930 Frame Vernacular		
IR00205	SS	4127 28TH AVE	4127 28TH AVE, GIFFORD	c1930 Frame Vernacular		
IR00206	SS	4133 28TH AVE	4133 28TH AVE, GIFFORD	c1925 Frame Vernacular		
IR00207	SS	4135 28TH AVE	4135 28TH AVE, GIFFORD	c1925 Frame Vernacular		
IR00232	SS	1915 38TH LN	1915 38TH LN, GIFFORD	c1925 Frame Vernacular		
IR00233	SS	1925 38TH LN	1925 38TH LN, GIFFORD	c1925 Bungalow		
IR00238	SS	1910 38TH PL	1910 38TH PL, GIFFORD	c1925 Bungalow		
IR00239	SS	1911 38TH PL	1911 38TH PL, GIFFORD	c1925 Bungalow		
IR00248	SS	3890 41ST ST	3890 41ST ST, GIFFORD	c1925 Bungalow		
IR00732	SS	MARVIN GARDENS LUNCH	3030 US 1, A, VERO BEACH	1926 Frame Vernacular		
IR00733	SS	MARVIN GARDENS OFFICE	3030 US 1, B, VERO BEACH	c1925 Frame Vernacular		
IR00738	SS	1316 31ST STREET #6	1316/#6 31ST STREET, VERO BEACH	c1935 Frame Vernacular		
IR00739	SS	1316 31ST STREET #7	1316/#7 31ST STREET, VERO BEACH	c1935 Frame Vernacular		
IR00740	SS	1316 31ST STREET #8	1316/#8 31ST STREET, VERO BEACH	c1935 Frame Vernacular		
IR00741	SS	1316 31ST STREET #9	1316/#9 31ST STREET, VERO BEACH	c1935 Frame Vernacular		
IR00742	SS	1316 31ST STREET #10	1316/#10 31ST STREET, VERO BEACH	c1935 Frame Vernacular		
IR00743	SS	1316 31ST STREET #11	1316/#11 31ST STREET, VERO BEACH	c1935 Frame Vernacular		
IR00753	SS	1345 32ND STREET	1345 32ND STREET, VERO BEACH	c1935 Frame Vernacular		
IR00761	SS	1355 33RD STREET	1355 33RD STREET, VERO BEACH	c1925 Frame Vernacular		
IR00762	SS	1365 33RD STREET	1365 33RD STREET, VERO BEACH	c1935 Frame Vernacular		
IR00763	SS	1366 33RD STREET	1366 33RD STREET, VERO BEACH	c1935 Frame Vernacular		
IR00764	SS	1376 33RD STREET	1376 33RD STREET, VERO BEACH	c1935 Frame Vernacular		
IR00765	SS	1375 33RD STREET	1375 33RD STREET, VERO BEACH	c1925 Frame Vernacular		
IR00766	SS	1394 33RD STREET	1394 33RD STREET, VERO BEACH	c1935 Masonry Vernacular		
IR01146	SS	Mt. Zion Baptist Church	18th AVE, Vero Beach	c1923 Other	Not Eligible	
IR01148	RG	Indian River Farms Main Canal	Vero Beach	Linear Resource - 1 Contrib Resources	Not Eligible	
IR01497	RG	Florida East Coast Railroad	Vero Beach	Linear Resource - 1 Contrib Resources		
IR01519	RG	Dixie Highway	Sebastian	Linear Resource - 1 Contrib Resources	Eligible	
IR01572	SS	3882 Old Dixie Highway	3882 Old Dixie HWY, Vero Beach	1950- Masonry Vernacular	Not Eligible	
IR01573	SS	3880 Old Dixie Highway	3880 Old Dixie HWY, Vero Beach	1950- Masonry Vernacular	Not Eligible	
IR01574	SS	Kool Kuts	4036 Old Dixie HWY, Vero Beach	1964- Commercial	Not Eligible	
IR01575	SS	Gold Fried Rice &Player's Club Pool Hall	4050-4066 Old Dixie HWY, Vero Beach	1948- Masonry Vernacular	Not Eligible	
IR01576	SS	New Club Bali	4076 Old Dixie HWY, Vero Beach	1948- Masonry Vernacular	Not Eligible	
IR01579	AR	Gifford Glass Scatter	Gifford		Insufficient Info	
IR01619	RG	Indian River Farms Company Canal-37th St	Vero Beach	Linear Resource - 1 Contrib Resources	Not Eligible	
IR01723	RG	Dodgertown	Vero Beach	FMSF Building Complex		
IR01735	SS	4004 43rd Avenue	4004 43rd AVE, Vero Beach	1957- Masonry Vernacular		
IR01736	SS	4024 43rd Avenue	4024 43rd AVE, Vero Beach	1956- Masonry Vernacular		

Date: 8/28/2023



Legend

- Buffer_of_Default_Annotation_Target_45
- FloridaSites
- HistoricalBridges
- HistoricalCemeteries
- ResourceGroups
- FloridaStructures

900 450 0 900 Meters

N

APPENDIX G: RECYCLING, REUSE AND WASTE REPRODUCTION PLAN

Recycling, Reuse, and Waste Reduction Plan

Per FAA Order 5100.38D, master plans funded with AIP dollars must address issues related to an airport's recycling, reuse, and waste reduction programs. This includes:

- Reviewing waste management contracts
- Assessing the feasibility of solid waste recycling at the airport
- Identifying operations and maintenance requirements
- Identifying the potential for cost savings or generation of revenue
- Minimizing the generation of waste at the airport

This recycling, reuse, and waste reduction plan provides information regarding the VRB waste and recycling programs, based on a review of the practices by VRB and its tenants.

1.1. Background

The inventory chapter detailed the various facilities and features of the airport. As a public-use airport, VRB is owned and operated as a department of the city of Vero Beach, Florida, and as such, primarily receives waste-handling services through the city's contract with Waste Management. Most of the waste at VRB is generated by the aeronautical and nonaeronautical tenants, as well as the users of the various facilities. VRB is responsible for collecting waste generated by the commercial airline service and its administration offices, while tenants are responsible for their own trash and any recycling disposal. In addition to municipal solid waste, VRB and some of the tenants have hazardous waste, spill waste, and project-related construction and demolition waste, which are typically managed by an outside contractor.

Common waste disposed at VRB includes:

- General office waste: paper, plastic (hard plastic containers and film plastics), aluminum cans, bottles, and cardboard boxes
- Small-scale in-flight service-related waste such as food, food packaging, paper products, and cardboard
- Construction and demolition waste from construction projects
- Hazardous waste such as batteries, fluorescent light bulbs, solvents, tires, and paint

Most of the waste generated by VRB staff is from the office areas; however, this is a small volume relative to the overall waste generated by the tenants, passenger airline service, restaurant, and other airport users. Some of the waste minimization efforts undertaken by one or more tenants include:

- Double-sided printing and electronic document use/storage
- Recycling fluorescent light bulbs, oil, and cleaning solvents
- Converting fluorescent light bulbs to longer-life LEDs
- Recycling scrap metal

VRB does not have a formalized recycling or waste reduction program; however, a number of tenants and businesses on VRB property have taken steps to reduce waste and increase recycling efforts. For example, there are tenants that recycle paper, plastic, glass, and scrap metals. Regardless, there are no formalized goals or targets and, therefore, no tracking or reporting on such measures at VRB. Because of the way solid waste and

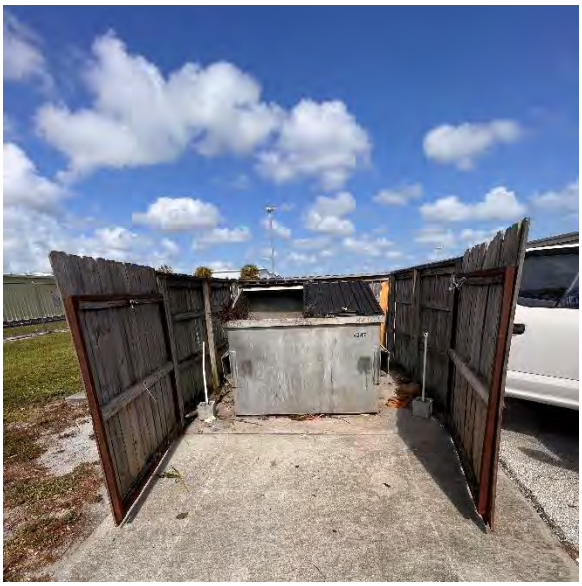
recycling services are billed (i.e., flat-rate billing rather than by volume), it is even difficult to track and monitor the performance of these services. A formalized recycling program could be established, but staff time requirements and costs are common challenges to such programs.

1.2. Waste Review

In lieu of a full waste audit, a review of waste management practices and programs was completed. In-person and virtual meetings were held with airport management, while other tenants and stakeholders, including aeronautical and numerous nonaeronautical businesses on VRB property, were contacted to complete a survey of their waste disposal practices. Of the 50 invitations sent to tenants, 23 completed the survey. A copy of the survey is included at the end of this document.

The tenants of VRB-managed hangars and facilities have access to dumpsters and even waste oil receptacles (see **Figure 1**). Other tenants are responsible for collecting waste items from their leased facilities. More than 50 aeronautical and nonaeronautical businesses have waste receptacles near their facilities, while others transport it to the various marked disposal containers (dumpsters) around VRB.

FIGURE 1: **DUMPSTER AND WASTE OIL RECEPTACLE IN THE VRB HANGAR AREA**



On-airport waste removal and disposal services are primarily provided through the city of Vero Beach's Solid Waste Division; however, some are handled by the Indian River County Solid Waste Disposal District. The city and county contract these services to Waste Management. From tenant responses, it was determined that most of those that recycle and have on-property collection are also serviced by Waste Management.

While there is no airportwide recycling pickup service, several tenants and businesses at VRB independently pay for commercial recycling services. In fact, more than half of the tenants that responded to the waste review survey indicated having some form of a commercial recycling program. Typical recycled items include paper, plastic, and cardboard, glass, plastic, metal, and aluminum cans. Additionally, a few contractors, mechanics, and construction businesses in VRB's industrial areas recycle scrap aluminum, other metals, and waste oils. Some tenants, mostly small business owners, report periodically taking recyclables to their residences for recycling disposal or to the

county landfill, which operates a recycling center. One of the more unique findings of this waste review was from the distillery in the south airport industrial park, which shared its practice of providing process waste (spent grains) to cattle farmers as a feed supplement. A small number of tenants expressed interest in recycling but would prefer a free option or inclusion with commercial waste removal, because the added cost of commercial recycling would be too expensive.

1.3. Review of Recycling Feasibility

There are factors that impact the operations at VRB's ability to recycle. The primary factor is that a recycling pick-up service is not provided in parallel with regularly scheduled commercial solid waste pickup and would require VRB to procure these services and assign staff to manage it. These would likely be the greatest barriers to implementing an effective airportwide recycling program. VRB has a relatively large footprint with many tenants and limited resources. Because most tenants and businesses oversee their own waste management contracts, continual coordination with all the tenants would not necessarily be needed for a successful recycling program to be implemented at airport-managed facilities.

Every other year, VRB hosts the Vero Beach Air Show. At the time of this airport master plan, this event is in the planning stages for the spring 2024 show. As a three-day event with additional days for setup and breakdown, the air show has historically drawn crowds between 55,000 and 75,000 attendees. This provides an opportunity for a recycling stream from an event that generates a fair amount of recyclable materials (e.g., bottles, cans, and paper products).

1.4. Operation and Maintenance Requirements

VRB has a very limited number of staff and additional responsibilities could be a burden, specifically on the limited janitorial staff responsible for maintaining the spaces and buildings managed by VRB. This could create a barrier to the implementation of an airportwide recycling program. Conversely, there are airport tenants that have considerably more staff than the airport and would be less burdened by initiating an in-house recycling program.

1.5. Potential for Cost Savings or Revenue Generation

For construction projects, the airport should consider promoting that all contracts require some level of cost savings related to the reuse or repurposing of materials. VRB may also be able to sell scrap metal, particularly from projects that involve demolition and/or construction. While the low volume of waste limits the potential for savings or a reliable revenue generation source, some of the nonaeronautical tenants sell scrap metals, proving the commodity market is present in the area. These are various contractors and construction businesses in the industrial areas leased by VRB.

1.6. Plan to Minimize Solid Waste Generation

The following initiatives were identified that could advance VRB's recycling and waste reduction efforts that can be implemented individually, based on staff resources.

- **Provide airportwide recycling:** Work with the city to establish a recycling service and collocate recycling receptacles with waste receptacles throughout the public areas in the terminal, administration offices, and facilities where waste is managed by the airport.
- **Provide water bottle filling stations:** Install water filling stations near water fountains beyond the security checkpoint and in public areas to help minimize disposable plastic bottles by encouraging the use of reusable bottles.

- **Provide recycling for large events:** Coordinate with organizers of large events at VRB that may create a large recycling stream, such as the Vero Beach Air Show, to provide recycling options for patrons and visitors.
- **Develop a waste reduction program:** Develop and implement a waste reduction program and encourage employee participation. The program should incentivize waste reduction, diversion, and recycling, as well as include quantifiable goals to track progress and performance. Identify relevant waste reduction goals and officewide recycling methods (e.g., reusable toner cartridges, rechargeable batteries, reusable packaging, etc.) and individual participation (e.g., reusable water bottles, etc.) to further this program.
- **Develop environmentally preferable purchasing procedures:** Work with the city to establish procedures for purchasing materials with recycled/bio-based content, low toxicity, or other environmentally friendly products. Consider green-label equipment in purchasing guidelines or other equipment that has low emissions and/or low sound levels.
- **Develop an awareness campaign:** If a recycling service is provided, educate employees, tenants, and customers about proper recycling practices; this could include posters and additional signage.
- **Provide hand dryers:** Install high-efficiency hand dryers in all restrooms that do not have them and reposition towel dispensers to reduce paper towel use.
- **Charitable donations:** Collect lost and found items (e.g., jackets, sunglasses), as well as materials abandoned in the passenger terminal facilities and donate these materials to a local charity, if allowed.
- **Enhance tenant engagement:** Coordinate with tenants to consolidate materials, improve the economies of scale, and expand awareness about recycling practices.
- **Host a periodic universal waste collection day:** Coordinate with the city of Vero Beach and/or Indian River County to host a periodic (quarterly or semiannual recommended) collection day for universal waste. Provide an opportunity for VRB employees, tenants, and even the local community to drop off materials such as batteries, lightbulbs, electronics, chemicals, paints, pesticides, etc. An example could be to coordinate with local jurisdictions to create an annual electronics recycling drive.

1.7. Waste Review Survey Distributed to Airport Tenants

1. What is the name of the business or organization that you represent?
   _____
2. What are the typical waste items your organization throws away?
   - **Paper**
   - **Plastic**
   - **Glass**
   - **Cardboard**
   - **Metals**
   - **Paint**
   - **Construction materials**
   - **Other (please specify)** _____
3. If you selected Metals, Paints, and/or Construction Materials in question 2 above, do you recycle, sell, or salvage construction waste or metal shavings?
   - ***Yes (please describe)*** _____
   - ***No***
   - ***Don't Know***
4. Before trash is disposed, are obvious or visible recyclables removed?
   - ***Yes (please specify)*** _____
   - ***No***
   - ***Don't Know***
5. Does your organization have a recycling program?
   - ***Yes***
   - ***No***
6. What materials does your organization collect for recycling?
   - **Paper**
   - **Plastic**
   - **Glass**
   - **Cardboard**
   - **Metals**
   - **Other (please specify)** _____

7. Do you separate recyclables, or do you use single-stream recycling (collected in one bin)?)
   - **Separate**
   - **Single-stream**
   - **Other (please specify)** _____

8. When did you begin your recycling program?
   _____

9. How frequently is waste picked up? **[daily, twice a week, weekly, monthly, other]**
    - **Daily**
    - **Twice a Week**
    - **Weekly**
    - **Monthly**
    - **Other (please specify)** _____
10. Who is your waste removal service provider? _____
11. Do you track the volume of waste or recyclables that is disposed/picked up? **[Yes or No]**
    - ***Yes***
    - ***No***
    - ***Don't Know***
12. Please Estimate the monthly volume for waste and recycling:
    - **Average total waste disposed of:** _____
    - **Average amount of recycling picked up:** _____

Policies and Practices

13. What current policies or procedures does your company require/follow related to waste collection or recycling? _____

14. Does your company have any waste reduction practices (e.g., double-sided printing, paperless office, preferable purchasing [recycled content, no VOCs, etc.], materials reuse)?

    _____

15. Do you have any materials (flyers, posters, etc.) promoting recycling near waste and recycling bins to encourage recycling?
    - ***Yes (describe)*** _____
    - ***No***
16. Has your facility established any waste reduction goals or targets? **[Yes or No]**
    - ***Yes***
    - ***No***
    - ***Don't Know***
17. Please Describe your waste reduction goals and targets.

    _____
18. Tell us about your success in meeting these goals. From your perspective, what are the challenges to this success? _____
19. Please provide any other information on how your company manages waste and recycled materials.

    _____
20. Would you be willing to share a recent waste and/or recycling collection invoice(s), so we may document volumes and service frequency at the airport? _____

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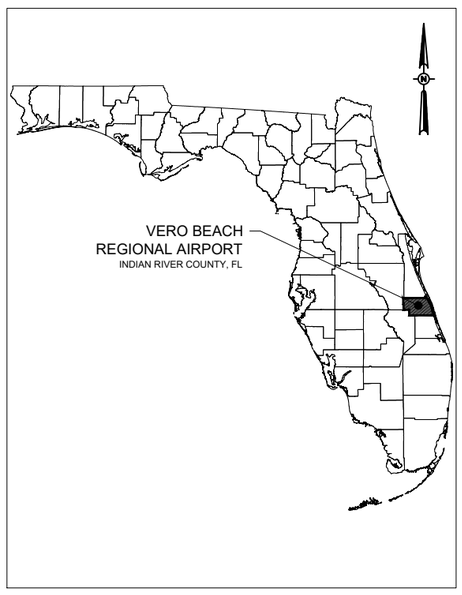
APPENDIX H: AIRPORT LAYOUT PLAN DRAWINGS SET

AIRPORT LAYOUT PLAN
FOR
VERO BEACH REGIONAL AIRPORT (VRB)
VERO BEACH, INDIAN RIVER COUNTY, FLORIDA
August 2024



INDEX OF SHEETS		
Sheet Number	**Sheet Title**	**REVISIONS**
1	COVER SHEET	
2	AIRPORT DATA SHEET (1 OF 2)	
3	AIRPORT DATA SHEET (2 OF 2)	
4	EXISTING AIRPORT LAYOUT PLAN	
5	FUTURE AIRPORT LAYOUT PLAN	
6	PART 77 AIRPORT AIRSPACE DRAWING	
7	PART 77 AIRSPACE OBSTRUCTION DATA (SHEET 1 OF 2)	
8	PART 77 AIRSPACE OBSTRUCTION DATA (SHEET 2 OF 2)	
9	TERMINAL AREA DRAWING - CENTRAL	
10	TERMINAL AREA DRAWING - SOUTH	
11	TERMINAL AREA DRAWING - SOUTHWEST	
12	TERMINAL AREA DRAWING - WEST	
13	TERMINAL AREA DRAWING - NORTH	
14	TERMINAL AREA DRAWING - MIDFIELD	
15	TERMINAL AREA DRAWING - NORTHWEST	
16	INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 12R	
17	INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 30L	
18	INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 4	
19	INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 22	
20	INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 12L	
21	INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 30R	
22	IPASD OBSTRUCTION DATA - RW 12L, 12R, 30L AND 30R	
23	IPASD OBSTRUCTION DATA - RW 4	
24	IPASD OBSTRUCTION DATA - RW 22	
25	RUNWAY 12R-30L DEPARTURE SURFACE DRAWING	
26	RUNWAY 4-22 DEPARTURE SURFACE DRAWING	
27	RUNWAY 12L-30R DEPARTURE SURFACE DRAWING	
28	DEPARTURE SURFACE OBSTRUCTION DATA - RW 12L, 12R, 30L AND 30R	
29	DEPARTURE SURFACE OBSTRUCTION DATA - RW 4 AND 22	
30	RUNWAY 12R-30L CENTERLINE PROFILE	
31	RUNWAY 4-22 CENTERLINE PROFILE	
32	RUNWAY 12L-30R CENTERLINE PROFILE	
33	AIRPORT LAND USE PLAN	
34	ATCT LINE-OF-SIGHT DRAWING	

NOTE:
VERTIPORT LAYOUT PLAN SET WAS DEVELOPED AS A STANDALONE DOCUMENT.

VICINITY MAP

LOCATION MAP

"In accepting and utilizing any drawings, reports and data on any form of electronic media generated and furnished by Hanson, the Recipient agrees that all such electronic files are instruments of service of Hanson, who shall be deemed the author, and shall retain all common law, statutory law, and other rights, including copyrights. Upon receipt, the electronic files shall be deemed to be accepted, and Hanson shall not have any obligation to correct errors, make changes or maintain electronic files.

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No.	Issue/Description	Date	By

FLORIDA DEPARTMENT OF TRANSPORTATION - OFFICE OF AVIATION
DISTRICT 4
3400 W. COMMERCIAL BLVD.
FT. LAUDERDALE, FL 33309
(954) 777-4130

Name — Date
Title

VERO BEACH REGIONAL AIRPORT

VERO BEACH REGIONAL AIRPORT
3400 CHEROKEE DRIVE
VERO BEACH, FLORIDA 32960
(772) 978-4930

Todd Scher — Date
Airport Director

Plans Prepared By:
This Airport Layout Plan (ALP) was prepared for the Vero Beach Regional Airport according to the applicable Advisory Circulars and the current version of FAA Standard Operating Procedure 2.0 ALP Review Checklist, and accurately depicts the airspace at the time of submittal. The ALP conforms with FAA design standards, except as noted.

Susan M Zellers

August 2024

Susan Zellers, P.E., AAE, ENV SP — Date
Senior Project Manager

HANSON
Engineering | Planning | Allied Services

Hanson Professional Services Inc.
6230 University Parkway, Suite 202
Sarasota, FL 34240
Phone: (941) 342-6321
www.hanson-inc.com

RUNWAY DATA TABLE

ITEM	RUNWAY 12R/30L		RUNWAY 12R/30L		RUNWAY 4/22		RUNWAY 4/22		RUNWAY 12L/30R		RUNWAY 12L/30R	
	EXISTING		FUTURE		EXISTING		FUTURE		EXISTING		FUTURE	
RUNWAY IDENTIFICATION	RUNWAY END 12R	RUNWAY END 30L	RUNWAY END 12R	RUNWAY END 30L	RUNWAY END 4	RUNWAY END 22	RUNWAY END 4	RUNWAY END 22	RUNWAY END 12L	RUNWAY END 30R	RUNWAY END 12L	RUNWAY END 30R
RUNWAY DESIGN CODE (RDC)	C-III		D-III		D-II		SAME		B-II UTILITY		SAME	
APPROACH REFERENCE CODE (APRC)	D/IV/4000; D/V/4000		SAME		B/III/4000; D/II/4000		SAME		B/II/4000		SAME	
DEPARTURE RFERENCE CODE (DPRC)	D/IV; D/V		SAME		B/III; D/II		SAME		B/II		SAME	
CRITICAL AIRCRAFT	AIRBUS 220-300		GULFSTREAM 650		GULFSTREAM 450		SAME		KING AIR 200		SAME	
PAVEMENT SURFACE TYPE	ASPHALT		SAME		ASPHALT		SAME		ASPHALT		SAME	
PAVEMENT STRENGTH (WHEEL LOADING)	85,000 LBS (SINGLE WHEEL) 115,000 LBS (DOUBLE WHEEL) 220,000 LBS (DOUBLE TANDEM)		SAME		30,000 LBS (SINGLE WHEEL) 115,000 LBS (DOUBLE WHEEL) 220,000 LBS (DOUBLE TANDEM)		SAME		12,500 LBS (SINGLE WHEEL)		SAME	
PAVEMENT STRENGTH (PCN)	56/F/A/W/T		SAME		41/F/B/W/T		SAME		8/F/B/Y/T		SAME	
SURFACE TREATMENT	GROOVED		SAME		GROOVED		SAME		NONE		SAME	
EFFECTIVE RUNWAY GRADIENT (%)	0.04%		SAME		0.06%		0.05%		0.00%		SAME	
MAXIMUM GRADIENT WITHIN RUNWAY	0.25%		SAME		0.19%		SAME		0.13%		SAME	
RUNWAY MEETS LINE-OF-SIGHT	YES		SAME		YES		SAME		YES		SAME	
WIND COVERAGE % (10.5/13/16 KTS)	92.80% / 96.38% / 99.19%		SAME		88.52% / 93.60%		SAME		92.8% / 96.38%		SAME	
RUNWAY DIMENSIONS	7,314' x 100'		7,314' x 150'		4,974' x 100'		5,700' x 100'		3,505' x 75'		4,205' x 75'	
DISPLACED THRESHOLD	N/A	N/A	SAME	SAME	N/A	N/A	SAME	SAME	N/A	N/A	SAME	SAME
RUNWAY SAFETY AREA (RSA) - STANDARD	9,314' x 500'		SAME		6,974' x 500'		SAME		4,105' x 75'		4,805' x 75'	
RSA STANDARD - LENGTH BEYOND DEPARTURE END	1,000'		SAME		1,000'		SAME		300'		SAME	
RSA STANDARD - LENGTH BEFORE THRESHOLD	600'		SAME		600'		SAME		300'		SAME	
RSA STANDARD - WIDTH	500'		SAME		500'		SAME		150'		SAME	
RUNWAY SAFETY AREA (RSA) - ACTUAL	9,276' x 500'		9,314' x 500'		6,945' x 500'		7,700' x 500'		4,105' x 150'		4,805' x 150'	
RSA ACTUAL - LENGTH BEYOND DEPARTURE END	962'	1,000'	1,000'	SAME	971'	1,000'	1,000'	SAME	300'	300'	SAME	SAME
RSA ACTUAL - LENGTH BEFORE THRESHOLD	600'		SAME		600'		SAME		300'	300'	SAME	SAME
RSA ACTUAL - WIDTH	500'		SAME		500'		SAME		150'		SAME	
RUNWAY END COORDINATES (NAD 83) LATITUDE	N27° 39' 28.2943"	N27° 39' 02.8011"	SAME	SAME	N27° 38' 58.7736"	N27° 39' 38.5223"	SAME	N27° 39' 44.33"	N27° 39' 37.383"	N27° 39' 25.0198"	N27° 39' 39.85"	SAME
LONGITUDE	W80° 25' 43.029"	W80° 24' 26.9032"	SAME	SAME	W80° 25' 35.976"	W80° 25' 03.321"	SAME	W80° 24' 58.55"	W80° 25' 00.8352"	W80° 24' 24.4284"	W80° 25' 08.11"	SAME
RUNWAY END ELEVATION (MSL)	23.3'	20.1'	SAME	SAME	23.4'	20.6'	SAME	SAME	19.5'	19.6'	SAME	SAME
DISPLACED THRESHOLD COORDINATES (NAD 83) LATITUDE	N/A	N/A	SAME	SAME	N/A	N/A	SAME	SAME	N/A	N/A	SAME	SAME
LONGITUDE	N/A	N/A	SAME	SAME	N/A	N/A	SAME	SAME	N/A	N/A	SAME	SAME
DISPLACED THRESHOLD ELEVATION (MSL)	N/A	N/A	SAME	SAME	N/A	N/A	SAME	SAME	N/A	N/A	SAME	SAME
RUNWAY LIGHTING TYPE	MIRL		HIRL		MIRL		SAME		MIRL		SAME	
RUNWAY PROTECTION ZONE (IN/OUT/LENGTH)	1,000' x 1,510' x 1,700'	1,000' x 1,510' x 1,700'	1,000' x 1,750' x 2,500'	SAME	1,000' x 1,510' x 1,700'	500' x 1,010' x 1,700'	SAME	SAME	250' x 450' x 1,000'	250' x 450' x 1,000'	SAME	SAME
RUNWAY MARKING TYPE	PRECISION	NON-PRECISION	SAME	SAME	NON-PRECISION	NON-PRECISION	SAME	SAME	BASIC	BASIC	SAME	SAME
14 CFR PART 77 APPROACH CATEGORY	NPI - D	NPI - D	SAME	SAME	NPI - C	NPI - C	SAME	SAME	VIS - A	VIS - A	SAME	SAME
14 CFR PART 77 APPROACH SLOPE	34:1	34:1	SAME	SAME	34:1	34:1	SAME	SAME	20:1	20:1	SAME	SAME
14 CFR PART 77 APPROACH DIMENSIONS (IN/OUT/LENGTH)	1,000' x 4,000' x 10,000'	1,000' x 4,000' x 10,000'	SAME	SAME	500' x 3,500' x 10,000'	500' x 3,500' x 10,000'	SAME	SAME	250' x 1,250' x 5,000'	250' x 1,250' x 5,000'	SAME	SAME
VISIBILITY MINIMUMS	3/4 MILE	3/4 MILE	1/2 MILE (APV)	SAME	3/4 MILE	3/4 MILE	SAME	SAME	VISUAL	VISUAL	SAME	SAME
TYPE OF AERONAUTICAL SURVEY FOR APPROACH	VERTICALLY GUIDED	VERTICALLY GUIDED	SAME	SAME	VERTICALLY GUIDED	VERTICALLY GUIDED	SAME	SAME	NOT-VERICALLY GUIDED	NON-VERTICALLY GUIDED	SAME	SAME
DEPARTURE SURFACE	YES	YES	SAME	SAME	YES	YES	SAME	SAME	YES	YES	SAME	SAME
RUNWAY OBJECT FREE AREA (ROFA) - STANDARD	9,314' x 800'		SAME		6,974' x 800'		7,700' x 800'		4,105' x 150'		4,805' x 500'	
STANDARD - LENGTH BEYOND DEPARTURE END	1,000'		SAME		1,000'		1,000'		300'		SAME	
STANDARD - LENGTH BEFORE THRESHOLD	600'		SAME		600'		600'		300'		SAME	
STANDARD - WIDTH	800'		SAME		800'		800'		500'		SAME	
RUNWAY OBJECT FREE AREA (ROFA) - ACTUAL	9,276' x 800'		9,314' x 800'		6,945' x 800'		7,700' x 800'		4,105' x 150'		4,805' x 500'	
ROFA ACTUAL - LENGTH BEYOND DEPARTURE END	962'	1,000'	1,000'	SAME	971'	1,000'	1,000'	SAME	300'		SAME	
ROFA ACTUAL - LENGTH BEFORE THRESHOLD	600'		SAME		600'		SAME		300'		SAME	
ROFA ACTUAL - WIDTH	800'		SAME		800'		SAME		500'		SAME	
RUNWAY OBSTACLE FREE ZONE (ROFZ) WIDTH	400'		SAME		400'		SAME		250'		SAME	
LENGTH BEYOND THRESHOLD	200		SAME		200		SAME		200'		SAME	
THRESHOLD SITING SURFACE (TSS) TYPE	SURFACE 5	SURFACE 5	SAME	SAME	SURFACE 5	SURFACE 5	SAME	SAME	SURFACE 2	SURFACE 2	SAME	SAME
(OFFSET/IN/OUT/LENGTH)	200' x 400' x 3,400' x 10,000'	200' x 400' x 3,400' x 10,000'			200' x 400' x 3,400' x 10,000'	200' x 400' x 3,400' x 10,000'			0' x 250' x 700' x 2,250' x 2,750'	0' x 250' x 700' x 2,250' x 2,750'		
VISUAL AND INSTRUMENT NAVAIDS	PAPI, REILs, LPV (GPS)	PAPI, REILs, LPV (GPS)	SAME	SAME	PAPI, REILs, LPV (GPS)	PAPI, REILs, LPV (GPS)	SAME	SAME	PAPI	PAPI	SAME	SAME
TOUCHDOWN ZONE ELEVATION (MSL)	23.4'	22.2'	SAME	SAME	23.6'	23.1'	SAME	SAME	19.6'	19.6'	SAME	SAME
RUNWAY CENTERLINE TO TAXIWAY CENTERLINE SEPARATION	400' - 475'		400'		350' - 400'		SAME		240'		SAME	

REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

AIRPORT DATA TABLE

ITEM	EXISTING	FUTURE
AIRPORT IDENTIFIER	VRB	SAME
MEAN MAX. TEMERATURE HOTTEST MONTH	88° F AUGUST	SAME
AIRPORT ELEVATION (MSL)	23.6'	SAME
AIRPORT NAVIGATIONAL AIDS	AIRPORT BEACON	SAME
AIRPORT REFERENCE POINT (NAD 83) LATITUDE	N27° 39' 20.00"	N27° 39' 21.66"
LONGITUDE	W80° 25' 11.29"	W80° 25' 11.80"
MISCELLANEOUS FACILITIES	LIGHTED WIND INDICATOR, ASOS, SAMS, BEACON	SAME
CRITICAL DESIGN AIRCRAFT	AIRBUS 220-300	GULFSTREAM 650
MAGNETIC VARIATION	7.28° W ± 0.34°, CHANGING 0.08° W PER YEAR	SAME
NPIAS SERVICE LEVEL	NON-PRIMARY	PRIMARY
STATE SERVICE LEVEL	COMMERCIAL SERVICE (LESS THAN 100,000 ENPLANEMENTS)	SAME

DECLARED DISTANCES

DECLARED DISTANCES	RUNWAY 12R	RUNWAY 30L	RUNWAY 4	RUNWAY 22	RUNWAY 12L	RUNWAY 30R
EXISTING						
TAKEOFF RUN AVAILABLE (TORA)	7,314'	7,314'	4,974'	4,974'	3,504'	3,504'
TAKEOFF DISTANCE AVAILABLE (TODA)	7,314'	7,314'	4,974'	4,974'	3,504'	3,504'
ACCELERATE STOP DISTANCE AVAILABLE (ASDA)	7,314'	7,276'	4,974'	4,945'	3,504'	3,504'
LANDING DISTANCE AVAILABLE (LDA)	7,314'	7,276'	4,974'	4,945'	3,504'	3,504'
FUTURE						
TAKEOFF RUN AVAILABLE (TORA)	SAME	SAME	5,700'	5,700'	4,205'	4,205'
TAKEOFF DISTANCE AVAILABLE (TODA)	SAME	SAME	5,700'	5,700'	4,205'	4,205'
ACCELERATE STOP DISTANCE AVAILABLE (ASDA)	SAME	7,314'	5,700'	5,700'	4,205'	4,205'
LANDING DISTANCE AVAILABLE (LDA)	SAME	7,314'	5,700'	5,700'	4,205'	4,205'

MODIFICATION OF STANDARDS

STANDARD TO BE MODIFIED	DESCRIPTION	AIRSPACE CASE NO.	APPROVAL DATE
NONE REQUIRED			

SOURCES:

1. MAGNETIC DECLINATION:	NATIONAL OCEANIC AND ATOMSPHERIC ADMINISTRATION (NOAA) NATIONAL GEOPHYSICAL DATA CENTER, DATED FEBRUARY 2024.
2. AIRPORT REFERENCE POINT:	CALCULATED USING NGS ARP COMPUTATION UTILITY.
3. BASE MAPPING:	NV5 GEOSPATIAL , DATED MAY 2023.
4. AERIAL PHOTOGRAPHY:	NV5 GEOSPATIAL, DATED MAY 2023.
5. MAPPING REFERENCES:	LATITUDE AND LONGITUDE ARE BASED ON THE FLORIDA STATE PLANE COORDINATE SYSTEM EAST ZONE NAD 1983. VERTICAL CONTROL REFERENCED TO NAVD 1988.

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VERO BEACH REGIONAL AIRPORT

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VERO BEACH, FL 32960
PHONE (772) 978-4930

VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	2-3_DATA.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

AIRPORT DATA SHEET (1 OF 2)

AUG 06, 2024 4:58 PM ALEXA02176
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TAXIWAY DATA TABLE - EXISTING

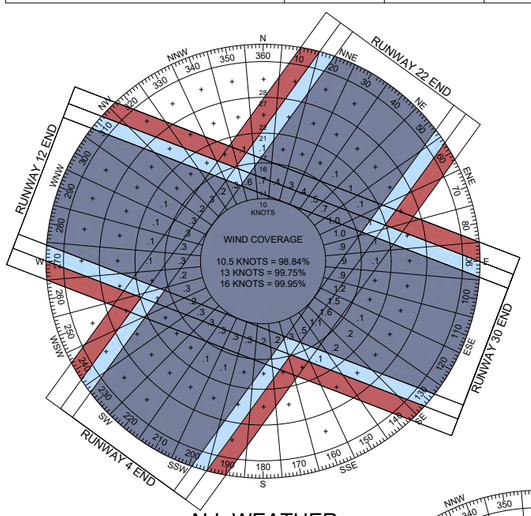
EXISTING TAXIWAY	TAXIWAY WIDTH	TAXIWAY DESIGN GROUP (TDG) *	TAXILANE CENTERLINE TO FIXED OR MOVABLE OBJECT	TAXIWAY CENTERLINE TO FIXED OR MOVABLE OBJECT	TAXIWAY SAFETY AREA (TSA)	TAXILANE OBJECT FREE AREA (TLOFA)	TAXIWAY OBJECT FREE AREA (TOFA)	TAXIWAY LIGHTING
TAXIWAY A (RUNWAY 22 END TO RUNWAY 12R/30L)	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY A (RUNWAY 12R/30L TO RUNWAY 4 END)	50'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY A1	50'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY A2 (TO BE REMOVED)	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY B	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY B (CONNECTOR AT RUNWAY 4 END)	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY B1	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY C	50'	TDG-3	55'	62'	79'	110'	124'	MITL
TAXIWAY C1	75'	TDG-3	55'	62'	79'	110'	124'	MITL
TAXIWAY C2 (TO BE RELOCATED)	75'	TDG-3	55'	62'	79'	110'	124'	MITL
TAXIWAY C3 (TO BE RELOCATED)	75'	TDG-3	55'	62'	79'	110'	124'	MITL
TAXIWAY C4	70'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY C5	60'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY C6	60'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY D (RUNWAY 12L/30R TO RUNWAY 12R/30L)	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY D (RUNWAY 12R/30L TO TERMINAL APRON)	75'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY E (RUNWAY 30L END TO TAXIWAY D)	40'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY E (TAXIWAY D TO RUNWAY 4/22)	50'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY E1	55'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY E3	60'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY F	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY F (CONNECTOR AT RUNWAY 30R END)	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY F1	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY F2	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY F (CONNECTOR AT RUNWAY 12L END - TO BE REMOVED)	35'	TDG-2A	55'	62'	79'	110'	124'	MITL

TAXIWAY DATA TABLE - FUTURE

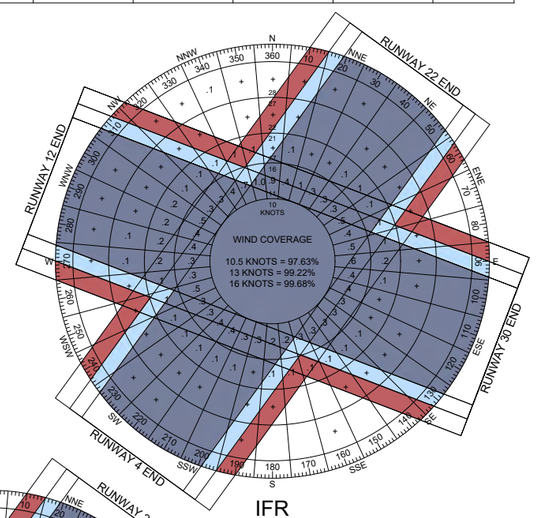
FUTURE TAXIWAY (PREVIOUS TAXIWAY NOMENCLATURE IN PARENTHESES)	TAXIWAY WIDTH	TAXIWAY DESIGN GROUP (TDG) *	TAXILANE CENTERLINE TO FIXED OR MOVABLE OBJECT	TAXIWAY CENTERLINE TO FIXED OR MOVABLE OBJECT	TAXIWAY SAFETY AREA (TSA)	TAXILANE OBJECT FREE AREA (TLOFA)	TAXIWAY OBJECT FREE AREA (TOFA)	TAXIWAY LIGHTING
TAXIWAY A (RUNWAY 22 END TO RUNWAY 12R/30L)	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY A (RUNWAY 12R/30L TO RUNWAY 4 END)	50'	TDG-3	55'	62'	79'	110'	124'	MITL
TAXIWAY A1 (A - CONNECTOR AT RUNWAY 4 END)	55'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY A2 (A1)	50'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY A3	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY B (RUNWAY 4 END TO TAXIWAY C)	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY B (TAXIWAY C TO RUNWAY 22 END)	50'	TDG-3	55'	62'	79'	110'	124'	MITL
TAXIWAY B1 (B - CONNECTOR AT RUNWAY 4 END)	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY B2 (B1)	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY B3	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY C	50'	TDG-3	55'	62'	79'	110'	124'	MITL
TAXIWAY C1	75'	TDG-3	55'	62'	79'	110'	124'	MITL
TAXIWAY C2	50'	TDG-3	55'	62'	79'	110'	124'	MITL
TAXIWAY C3	50'	TDG-3	55'	62'	79'	110'	124'	MITL
TAXIWAY C4	70'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY C5	60'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY C6	50'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY C7 (C6)	60'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY D (RUNWAY 12L/30R TO RUNWAY 12R/30L)	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY D (RUNWAY 12R/30L TO TERMINAL APRON)	75'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY E	50'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY E1	55'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY E2	50'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY E3	60'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY E6	50'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY E7	50'	TDG-3	79'	85.5'	118'	158'	171'	MITL
TAXIWAY F	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY F1 (F - CONNECTOR AT RUNWAY 30R END)	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY F2 (F1)	35'	TDG-2A	55'	62'	79'	110'	124'	MITL
TAXIWAY F3 (F2)	35'	TDG-2A	55'	62'	79'	110'	124'	MITL

SURVEY MONUMENTS - EXISTING

SURVEY MONUMENT	COORDINATES		ELEVATION (MSL)
	LATITUDE	LONGITUDE	
VERO 27 26 34 35 (SACS)	N27° 39' 37.3134"	W80° 24' 49.0237"	17.3'
VRB A (PACS)	N27° 39' 17.2378"	W80° 24' 46.7338"	19.0'
VRB ARP 2 1964	N27° 39' 15.2843"	W80° 24' 57.8469"	20.0'
VRB AP STA A (SACS)	N27° 39' 20.5626"	W80° 25' 23.0546"	21.2'
VERO PORT WEST BASE	N27° 39' 14.2"	W79° 25' 48.8"	22.15'
VERO PORT EAST BASE	N27° 39' 00.5'	W80° 24' 35.8"	20.33'

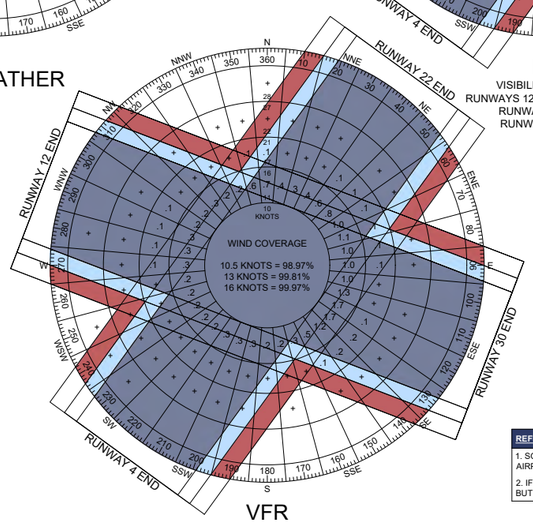


ALL WEATHER



IFR

VISIBILITY MINIMUMS
RUNWAYS 12R AND 30L: 3/4 MILE
RUNWAY 4: 7/8 MILE
RUNWAY 22: 1 MILE



VFR

REFERENCES:

1. SOURCE: FAA ADIP DATA FROM VERO BEACH REGIONAL AIRPORT (VRB), PERIOD OF RECORD 2011-2020

2. IFR CONDITIONS CELIING <1,000' AND/OR VISIBILITY < 3 MILES, BUT CEILING ≥200' AND VISIBILITY ≥0.5 MILES.

REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.

2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTE:

1. NO OBJECTS LOCATED WITHIN THE SAFETY AREA OR OBJECT FREE AREA OTHER THAN THOSE FIXED BY FUNCTION.

WIND COVERAGE

RUNWAY	ALL WEATHER			IFR			VFR		
	10.5 KNOTS	13 KNOTS	16 KNOTS	10.5 KNOTS	13 KNOTS	16 KNOTS	10.5 KNOTS	13 KNOTS	16 KNOTS
RUNWAY 4/22	88.52%	93.60%	98.49%	90.61%	94.39%	97.53%	88.29%	93.51%	98.59%
RUNWAY 12/30	92.80%	96.38%	99.19%	91.67%	95.44%	98.47%	92.90%	96.47%	99.27%
COMBINED	98.84%	99.75%	99.95%	97.63%	99.22%	99.68%	98.97%	99.81%	99.97%

SECTION 163 DETERMINATION

DATE	DESCRIPTION OF PROJECT	ALP AUTHORITY	LAND USE AUTHORITY

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3400 CHEROKEE DRIVE
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PHONE (772) 978-4930

VERO BEACH
REGIONAL AIRPORT
(VRB)

AIRPORT LAYOUT PLAN
DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	2-3_DATA.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

AIRPORT
DATA SHEET
(2 OF 2)

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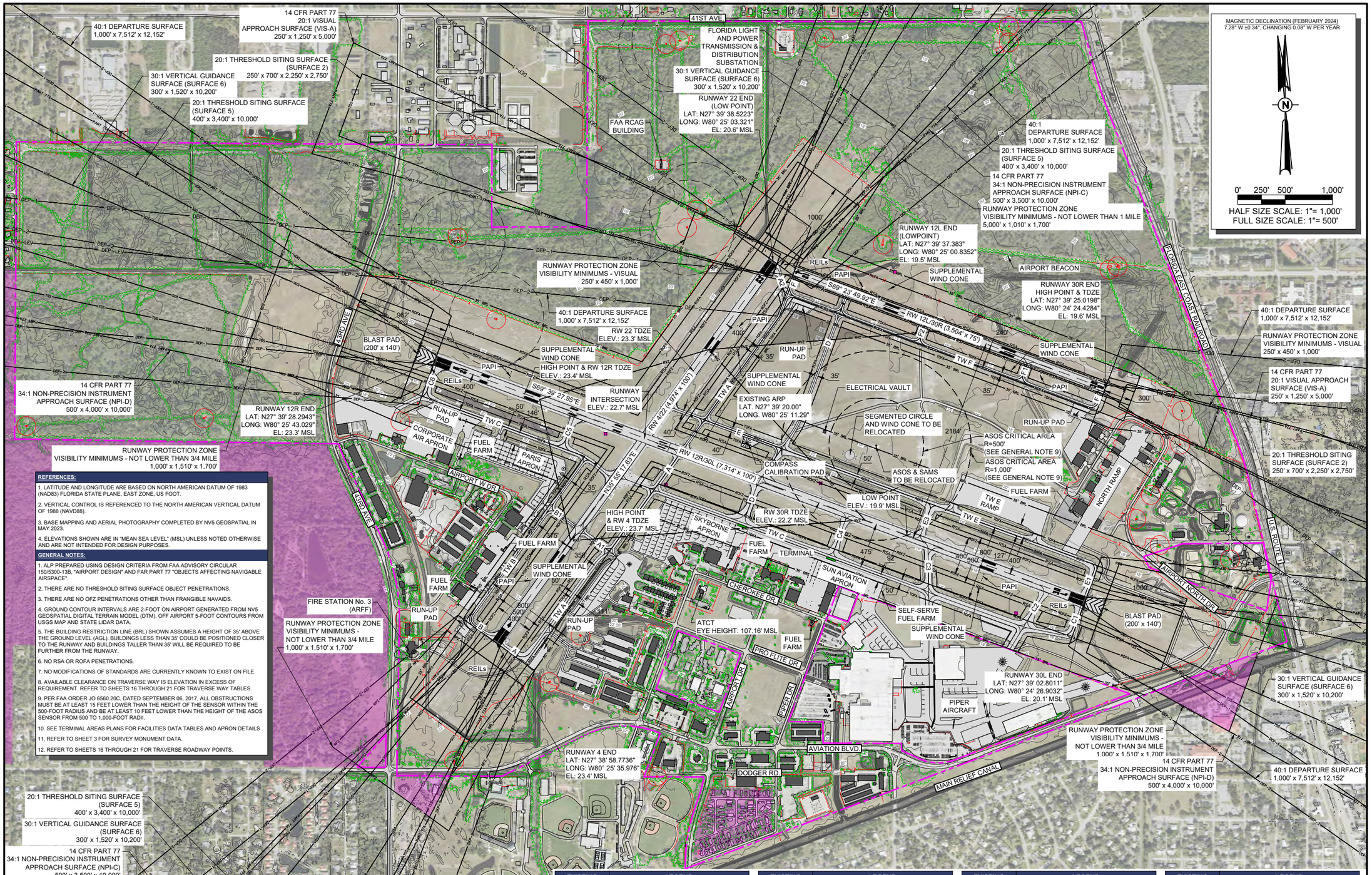

REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE, US FOOT.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. BASE MAPPING AND AERIAL PHOTOGRAPHY COMPLETED BY NV5 GEOSPATIAL IN MAY 2023.
4. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. THERE ARE NO THRESHOLD SITING SURFACE OBJECT PENETRATIONS.
3. THERE ARE NO OFZ PENETRATIONS OTHER THAN FRANGIBLE NAVAIDS.
4. GROUND CONTOUR INTERVALS ARE 2-FOOT ON AIRPORT GENERATED FROM NV5 GEOSPATIAL DIGITAL TERRAIN MODEL (DTM). OFF AIRPORT 5-FOOT CONTOURS FROM USGS MAP AND STATE LIDAR DATA.
5. THE BUILDING RESTRICTION LINE (BRL) SHOWN ASSUMES A HEIGHT OF 35' ABOVE THE GROUND LEVEL (AGL). BUILDINGS LESS THAN 35' COULD BE POSITIONED CLOSER TO THE RUNWAY AND BUILDINGS TALLER THAN 35' WILL BE REQUIRED TO BE FURTHER FROM THE RUNWAY.
6. NO RSA OR ROFA PENETRATIONS.
7. NO MODIFICATIONS OF STANDARDS ARE CURRENTLY KNOWN TO EXIST ON FILE.
8. AVAILABLE CLEARANCE ON TRAVERSE WAY IS ELEVATION IN EXCESS OF REQUIREMENT. REFER TO SHEETS 16 THROUGH 21 FOR TRAVERSE WAY TABLES.
9. PER FAA ORDER JO 6560.20C, DATED SEPTEMBER 06, 2017, ALL OBSTRUCTIONS MUST BE AT LEAST 15 FEET LOWER THAN THE HEIGHT OF THE SENSOR WITHIN THE 500-FOOT RADIUS AND BE AT LEAST 10 FEET LOWER THAN THE HEIGHT OF THE ASOS SENSOR FROM 500 TO 1,000-FOOT RADII.
10. SEE TERMINAL AREAS PLANS FOR FACILITIES DATA TABLES AND APRON DETAILS .
11. REFER TO SHEET 3 FOR SURVEY MONUMENT DATA.
12. REFER TO SHEETS 16 THROUGH 21 FOR TRAVERSE ROADWAY POINTS.

EXISTING	LEGEND
	AIRPORT PROPERTY LINE
	SURVEY MONUMENT
	VEGETATION
	AIRPORT FENCE (10 FT)
	CITY WELL (200 FT DIAMETER PROTECTION AREA)
	AIRPORT EASEMENT
	ROADS
	BUILDINGS (ON-AIRPORT PROPERTY)

EXISTING	LEGEND
	AIRFIELD PAVEMENT
	AIRPORT REFERENCE POINT (ARP)
	PRECISION APPROACH PATH INDICATOR (PAPI)
	RUNWAY END IDENTIFIER LIGHTS (REIL)
	ROTATING BEACON
	WIND CONE
	ASOS
	ASOS PROTECTION AREA

EXISTING	LEGEND
RPZ	RUNWAY PROTECTION ZONE (RPZ)
RSA	RUNWAY SAFETY AREA (RSA)
ROFA	RUNWAY OBJECT FREE AREA (ROFA)
ROFZ	RUNWAY OBJECT FREE ZONE (ROFZ)
TSA	TAXIWAY SAFETY AREA (TSA)
TOFA	TAXIWAY OBJECT FREE AREA (TOFA)
BRL	BUILDING RESTRICTION LINE (BRL)
PART 77A	FAR PART 77 APPROACH SURFACE (PART 77A)

EXISTING	LEGEND
DEP-1	DEPARTURE SURFACE - SECTION 1 (DEP-1)
DEP-2	DEPARTURE SURFACE - SECTION 2 (DEP-2)
DEP-LEV	DEPARTURE SURFACE - SECTION LEVEL (DEP-LEV)
TSS	THRESHOLD SITTING SURFACE (TSS)
VGS	VERTICAL GUIDANCE SURFACE (VGS)

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VERO BEACH, FL 32960
PHONE (772) 978-4930

VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	4_EX ALP.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

EXISTING AIRPORT LAYOUT PLAN

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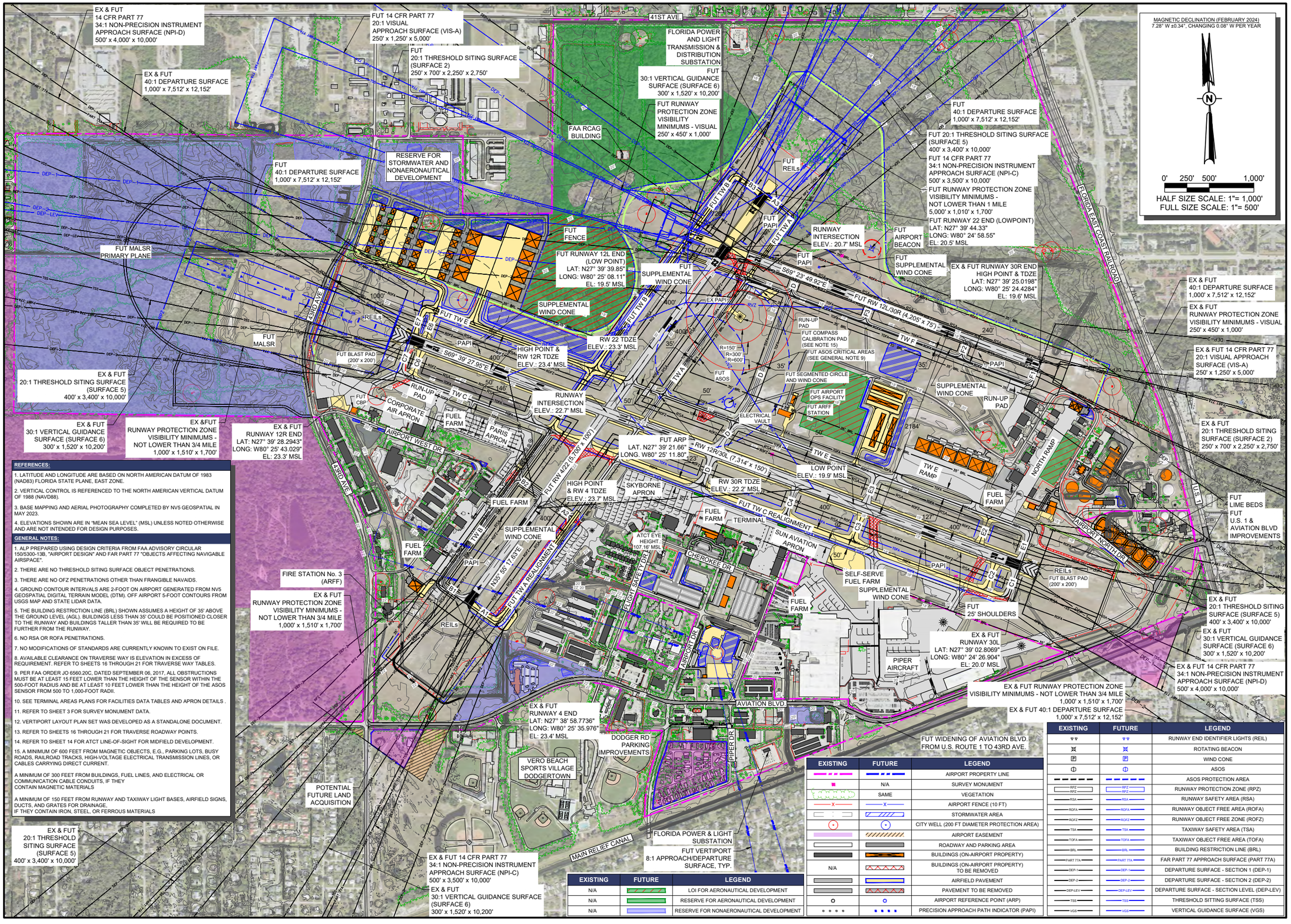

REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. BASE MAPPING AND AERIAL PHOTOGRAPHY COMPLETED BY NV5 GEOSPATIAL IN MAY 2023.
4. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. THERE ARE NO THRESHOLD SITING SURFACE OBJECT PENETRATIONS.
3. THERE ARE NO OFZ PENETRATIONS OTHER THAN FRANGIBLE NAVAIDS.
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6. NO RSA OR ROFA PENETRATIONS.
7. NO MODIFICATIONS OF STANDARDS ARE CURRENTLY KNOWN TO EXIST ON FILE.
8. AVAILABLE CLEARANCE ON TRAVERSE WAY IS ELEVATION IN EXCESS OF REQUIREMENT. REFER TO SHEETS 16 THROUGH 21 FOR TRAVERSE WAY TABLES.
9. PER FAA ORDER JO 6560.20C, DATED SEPTEMBER 06, 2017, ALL OBSTRUCTIONS MUST BE AT LEAST 15 FEET LOWER THAN THE HEIGHT OF THE SENSOR WITHIN THE 500-FOOT RADIUS AND BE AT LEAST 10 FEET LOWER THAN THE HEIGHT OF THE ASOS SENSOR FROM 500 TO 1,000-FOOT RADII.
10. SEE TERMINAL AREAS PLANS FOR FACILITIES DATA TABLES AND APRON DETAILS .
11. REFER TO SHEET 3 FOR SURVEY MONUMENT DATA.
12. VERTIPORT LAYOUT PLAN SET WAS DEVELOPED AS A STANDALONE DOCUMENT.
13. REFER TO SHEETS 16 THROUGH 21 FOR TRAVERSE ROADWAY POINTS.
14. REFER TO SHEET 14 FOR ATCT LINE-OF-SIGHT FOR MIDFIELD DEVELOPMENT.
15. A MINIMUM OF 600 FEET FROM MAGNETIC OBJECTS, E.G., PARKING LOTS, BUSY ROADS, RAILROAD TRACKS, HIGH-VOLTAGE ELECTRICAL TRANSMISSION LINES, OR CABLES CARRYING DIRECT CURRENT.

A MINIMUM OF 300 FEET FROM BUILDINGS, FUEL LINES, AND ELECTRICAL OR COMMUNICATION CABLE CONDUITS, IF THEY CONTAIN MAGNETIC MATERIALS

A MINIMUM OF 150 FEET FROM RUNWAY AND TAXIWAY LIGHT BASES, AIRFIELD SIGNS, DUCTS, AND GRATES FOR DRAINAGE, IF THEY CONTAIN IRON, STEEL, OR FERROUS MATERIALS

EXISTING	FUTURE	LEGEND
N/A		LOI FOR AERONAUTICAL DEVELOPMENT
N/A		RESERVE FOR AERONAUTICAL DEVELOPMENT
N/A		RESERVE FOR NONAERONAUTICAL DEVELOPMENT

EXISTING	FUTURE	LEGEND
		AIRPORT PROPERTY LINE
	N/A	SURVEY MONUMENT
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
		STORMWATER AREA
		CITY WELL (200 FT DIAMETER PROTECTION AREA)
		AIRPORT EASEMENT
		ROADWAY AND PARKING AREA
		BUILDINGS (ON-AIRPORT PROPERTY)
N/A		BUILDINGS (ON-AIRPORT PROPERTY) TO BE REMOVED
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
		AIRPORT REFERENCE POINT (ARP)
		PRECISION APPROACH PATH INDICATOR (PAPI)

EXISTING	FUTURE	LEGEND
		RUNWAY END IDENTIFIER LIGHTS (REIL)
		ROTATING BEACON
		WIND CONE
		ASOS
		ASOS PROTECTION AREA
RPZ	RPZ	RUNWAY PROTECTION ZONE (RPZ)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
ROFA	ROFA	RUNWAY OBJECT FREE AREA (ROFA)
ROFZ	ROFZ	RUNWAY OBJECT FREE ZONE (ROFZ)
TSA	TSA	TAXIWAY SAFETY AREA (TSA)
TOFA	TOFA	TAXIWAY OBJECT FREE AREA (TOFA)
BRL	BRL	BUILDING RESTRICTION LINE (BRL)
PART 77A	PART 77A	FAR PART 77 APPROACH SURFACE (PART 77A)
DEP-1	DEP-1	DEPARTURE SURFACE - SECTION 1 (DEP-1)
DEP-2	DEP-2	DEPARTURE SURFACE - SECTION 2 (DEP-2)
DEP-LEV	DEP-LEV	DEPARTURE SURFACE - SECTION LEVEL (DEP-LEV)
TSS	TSS	THRESHOLD SITTING SURFACE (TSS)
VGS	VGS	VERTICAL GUIDANCE SURFACE (VGS)

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REGIONAL AIRPORT
(VRB)

AIRPORT LAYOUT PLAN
DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	5_FUT ALP.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

FUTURE AIRPORT
LAYOUT PLAN

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14 CFR PART 77 AIRPORT AIRSPACE OBSTRUCTION DATA TABLE

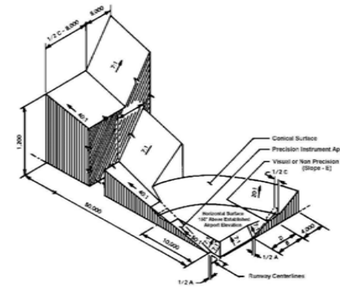
OBJECT DATA			SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE	PROPOSED DISPOSITION
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)				
80395	POLE	77	69	8	7:1 TRANSITIONAL	LIGHT/MARK
80403	POLE	76	72	4	7:1 TRANSITIONAL	LIGHT/MARK
80411	POLE	92	92	0	7:1 TRANSITIONAL	NO ACTION
80435	POLE	94	94	0	7:1 TRANSITIONAL	NO ACTION
80451	TREE	95	95	0	7:1 TRANSITIONAL	TRIM/REMOVE
80922	POLE	75	75	0	7:1 TRANSITIONAL	LIGHT/MARK
80930	POLE	74	71	3	7:1 TRANSITIONAL	LIGHT/MARK
80954	POLE	55	55	0	7:1 TRANSITIONAL	NO ACTION
80970	POLE	55	55	0	7:1 TRANSITIONAL	NO ACTION
80978	POLE	69	68	1	7:1 TRANSITIONAL	LIGHT/MARK
81170	CONTROL TOWER	129	100	29	7:1 TRANSITIONAL	LIGHT/MARK
83953	TREE	95	78	17	7:1 TRANSITIONAL	TRIM/REMOVE
83961	TREE	83	73	10	7:1 TRANSITIONAL	TRIM/REMOVE
83977	TREE	87	64	24	7:1 TRANSITIONAL	TRIM/REMOVE
83985	TREE	77	74	3	7:1 TRANSITIONAL	TRIM/REMOVE
85745	TREE	59	58	1	7:1 TRANSITIONAL	TRIM/REMOVE
85917	POWER POLE	100	100	0	7:1 TRANSITIONAL	NO ACTION
87613	TREE	68	68	0	7:1 TRANSITIONAL	TRIM/REMOVE
87717	TREE	70	58	12	7:1 TRANSITIONAL	TRIM/REMOVE
87725	TREE	53	53	0	7:1 TRANSITIONAL	TRIM/REMOVE
88240	TREE	67	66	2	7:1 TRANSITIONAL	TRIM/REMOVE
88704	TREE	74	74	0	7:1 TRANSITIONAL	TRIM/REMOVE
89420	POLE	94	94	0	7:1 TRANSITIONAL	NO ACTION
91466	TREE	81	77	4	7:1 TRANSITIONAL	TRIM/REMOVE
91474	TREE	73	70	2	7:1 TRANSITIONAL	TRIM/REMOVE
91498	TREE	70	67	3	7:1 TRANSITIONAL	TRIM/REMOVE
91506	TREE	73	73	0	7:1 TRANSITIONAL	TRIM/REMOVE
92904	POLE	87	86	1	7:1 TRANSITIONAL	LIGHT/MARK
94033	POLE	69	69	0	7:1 TRANSITIONAL	NO ACTION
94161	POLE	73	73	0	7:1 TRANSITIONAL	NO ACTION
94635	POLE	68	68	0	7:1 TRANSITIONAL	NO ACTION
95472	POLE	78	78	0	7:1 TRANSITIONAL	NO ACTION
95624	TREE	73	66	7	7:1 TRANSITIONAL	TRIM/REMOVE
95632	TREE	67	63	5	7:1 TRANSITIONAL	TRIM/REMOVE
95680	TREE	72	54	18	7:1 TRANSITIONAL	TRIM/REMOVE
95696	TREE	64	50	14	7:1 TRANSITIONAL	TRIM/REMOVE
97240	TREE	105	85	20	7:1 TRANSITIONAL	TRIM/REMOVE
97686	TREE	82	66	16	7:1 TRANSITIONAL	TRIM/REMOVE
98430	TREE	87	65	23	7:1 TRANSITIONAL	TRIM/REMOVE
103282	TREE	55	50	4	7:1 TRANSITIONAL	TRIM/REMOVE
103314	TREE	52	50	1	7:1 TRANSITIONAL	TRIM/REMOVE
103786	TREE	81	79	2	7:1 TRANSITIONAL	TRIM/REMOVE
106050	POLE	58	59	0	7:1 TRANSITIONAL	NO ACTION
111905	TREE	68	66	2	7:1 TRANSITIONAL	TRIM/REMOVE
111913	TREE	67	67	0	7:1 TRANSITIONAL	TRIM/REMOVE
111945	TREE	65	65	0	7:1 TRANSITIONAL	TRIM/REMOVE
112049	TREE	63	57	6	7:1 TRANSITIONAL	TRIM/REMOVE
112089	TREE	60	55	5	7:1 TRANSITIONAL	TRIM/REMOVE
112113	TREE	58	53	5	7:1 TRANSITIONAL	TRIM/REMOVE
112129	TREE	79	67	11	7:1 TRANSITIONAL	TRIM/REMOVE
112497	TREE	70	62	8	7:1 TRANSITIONAL	TRIM/REMOVE
112505	TREE	71	64	6	7:1 TRANSITIONAL	TRIM/REMOVE
112521	TREE	59	58	1	7:1 TRANSITIONAL	TRIM/REMOVE
113221	TREE	69	60	9	7:1 TRANSITIONAL	TRIM/REMOVE
116036	TREE	70	50	20	7:1 TRANSITIONAL	TRIM/REMOVE
116044	TREE	68	50	18	7:1 TRANSITIONAL	TRIM/REMOVE
116052	TREE	72	52	21	7:1 TRANSITIONAL	TRIM/REMOVE
116060	TREE	68	50	18	7:1 TRANSITIONAL	TRIM/REMOVE
116068	TREE	71	53	18	7:1 TRANSITIONAL	TRIM/REMOVE
116076	TREE	69	53	16	7:1 TRANSITIONAL	TRIM/REMOVE
116084	TREE	69	53	16	7:1 TRANSITIONAL	TRIM/REMOVE
116092	TREE	71	57	14	7:1 TRANSITIONAL	TRIM/REMOVE
116100	TREE	70	55	15	7:1 TRANSITIONAL	TRIM/REMOVE
116380	TREE	51	51	0	7:1 TRANSITIONAL	TRIM/REMOVE
116412	TREE	53	51	1	7:1 TRANSITIONAL	TRIM/REMOVE
116420	TREE	51	50	1	7:1 TRANSITIONAL	TRIM/REMOVE
116484	TREE	52	50	2	7:1 TRANSITIONAL	TRIM/REMOVE
116868	TREE	53	52	1	7:1 TRANSITIONAL	TRIM/REMOVE
116876	TREE	54	50	4	7:1 TRANSITIONAL	TRIM/REMOVE
116900	TREE	67	59	8	7:1 TRANSITIONAL	TRIM/REMOVE
116908	TREE	57	57	0	7:1 TRANSITIONAL	TRIM/REMOVE
116940	TREE	69	70	0	7:1 TRANSITIONAL	TRIM/REMOVE
117084	TREE	70	66	4	7:1 TRANSITIONAL	TRIM/REMOVE
117092	TREE	64	64	0	7:1 TRANSITIONAL	TRIM/REMOVE
117100	TREE	65	63	2	7:1 TRANSITIONAL	TRIM/REMOVE
117108	TREE	67	64	3	7:1 TRANSITIONAL	TRIM/REMOVE
117156	TREE	69	64	5	7:1 TRANSITIONAL	TRIM/REMOVE
117164	TREE	68	64	5	7:1 TRANSITIONAL	TRIM/REMOVE
117172	TREE	68	65	2	7:1 TRANSITIONAL	TRIM/REMOVE
117180	TREE	65	65	0	7:1 TRANSITIONAL	TRIM/REMOVE
117188	TREE	69	66	3	7:1 TRANSITIONAL	TRIM/REMOVE
117196	TREE	68	68	0	7:1 TRANSITIONAL	TRIM/REMOVE
117220	TREE	65	64	0	7:1 TRANSITIONAL	TRIM/REMOVE
117228	TREE	65	64	1	7:1 TRANSITIONAL	TRIM/REMOVE
117236	TREE	67	62	5	7:1 TRANSITIONAL	TRIM/REMOVE
117244	TREE	64	61	3	7:1 TRANSITIONAL	TRIM/REMOVE
117252	TREE	64	62	2	7:1 TRANSITIONAL	TRIM/REMOVE
117260	TREE	63	63	0	7:1 TRANSITIONAL	TRIM/REMOVE
117268	TREE	64	62	2	7:1 TRANSITIONAL	TRIM/REMOVE
117276	TREE	64	64	0	7:1 TRANSITIONAL	TRIM/REMOVE

OBSTRUCTION IDENTIFICATION SURFACES
FEDERAL AVIATION REGULATIONS PART 77

DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON - PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY (PIR)
		A	B	A	B		
					C	D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON - PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B		
					C	D	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:01	20:01	20:01	34:01:00	34:01:00	*

A - UTILITY RUNWAYS
B - RUNWAYS LARGER THAN UTILITY
C - VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
Source: https://www.ngs.noaa.gov/AERO/oisspec.html

D - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
* - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000



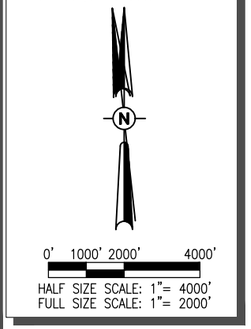
REFERENCES:

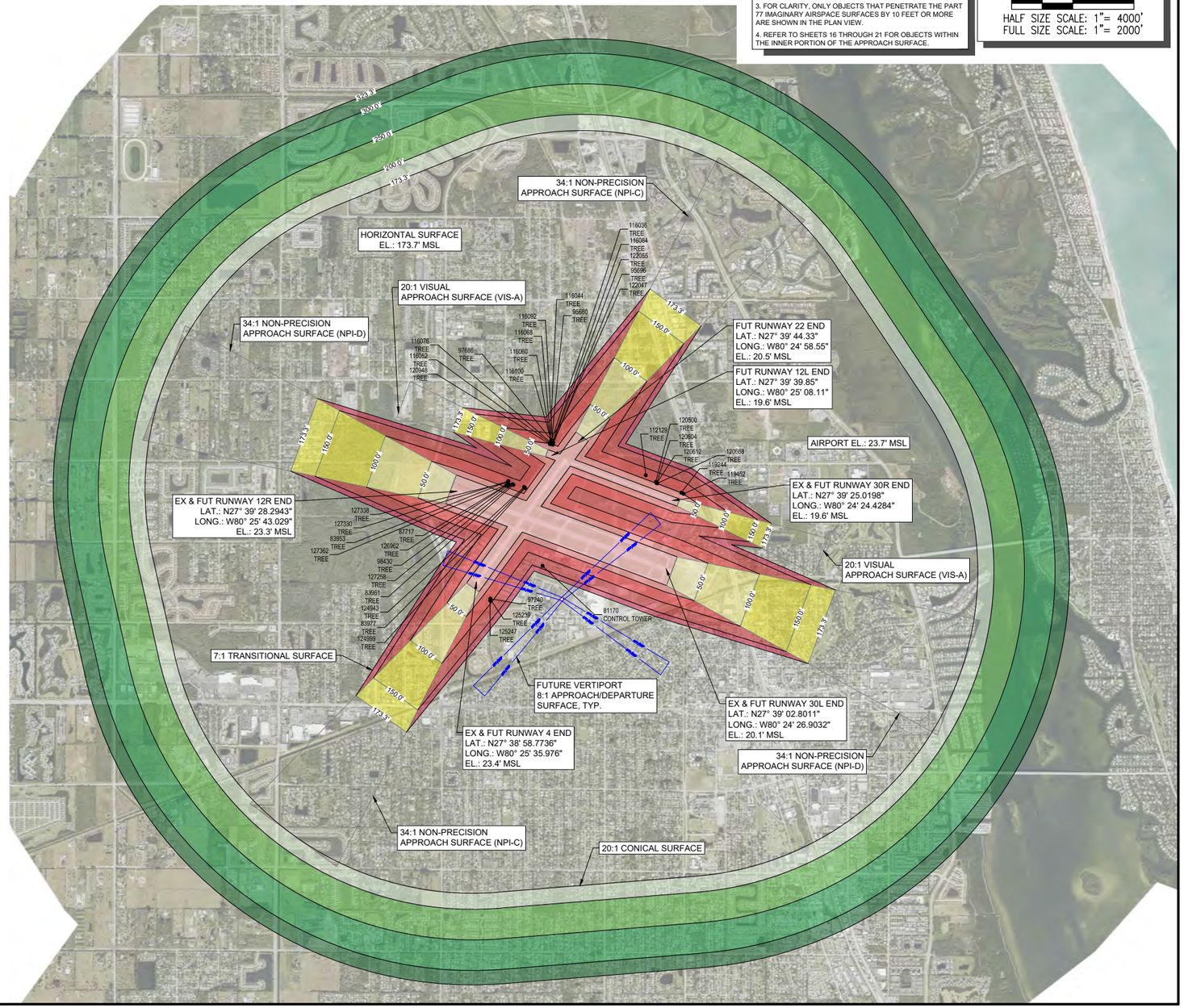
1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.
4. OBSTRUCTION SURVEY COMPLETED BY NV5 GEOSPATIAL DATED MAY 2023.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. REFER TO SHEETS 7 AND 8 FOR ADDITIONAL PART 77 IMAGINARY AIRSPACE SURFACES OBSTRUCTION DATA TABLES. TO LIMIT THE NEED OF ADDITIONAL SHEETS IN THE SET, THE PART 77 IMAGINARY AIRSPACE SURFACES OBSTRUCTION DATA TABLES ONLY INCLUDE OBJECTS THAT PENETRATE THE PART 77 IMAGINARY AIRSPACE SURFACES. ELECTRICAL FILES PROVIDED TO THE AIRPORT INCLUDE ALL OBJECTS THAT PENETRATE OR ARE WITHIN 15 FEET OF THE PART 77 IMAGINARY AIRSPACE SURFACES.
3. FOR CLARITY, ONLY OBJECTS THAT PENETRATE THE PART 77 IMAGINARY AIRSPACE SURFACES BY 10 FEET OR MORE ARE SHOWN IN THE PLAN VIEW.
4. REFER TO SHEETS 16 THROUGH 21 FOR OBJECTS WITHIN THE INNER PORTION OF THE APPROACH SURFACE.

MAGNETIC DECLINATION (FEBRUARY 2024)
7.28° W ±0.34', CHANGING 0.08' W PER YEAR





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VERO BEACH REGIONAL AIRPORT

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3400 CHEROKEE DRIVE
VERO BEACH, FL 32960
PHONE (772) 978-4930

VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	6-8_AIRSPACE.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

PART 77 AIRPORT AIRSPACE DRAWING

AUG 06, 2024 5:01 PM ALEXA02176
I:\20JOBS\20A0069W01\CAD\AIRPORT\SHEET\ALP\6-8_AIRSPACE.DWG

14 CFR PART 77 AIRPORT AIRSPACE OBSTRUCTION DATA TABLE

OBJECT DATA			SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE	PROPOSED DISPOSITION
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)				
117284	TREE	64	61	3	7:1 TRANSITIONAL	TRIM/REMOVE
117292	TREE	62	61	1	7:1 TRANSITIONAL	TRIM/REMOVE
117300	TREE	63	59	3	7:1 TRANSITIONAL	TRIM/REMOVE
117308	TREE	66	58	8	7:1 TRANSITIONAL	TRIM/REMOVE
117316	TREE	59	56	2	7:1 TRANSITIONAL	TRIM/REMOVE
117324	TREE	63	59	4	7:1 TRANSITIONAL	TRIM/REMOVE
117332	TREE	65	62	3	7:1 TRANSITIONAL	TRIM/REMOVE
117340	TREE	64	60	4	7:1 TRANSITIONAL	TRIM/REMOVE
117348	TREE	63	60	4	7:1 TRANSITIONAL	TRIM/REMOVE
117356	TREE	64	61	2	7:1 TRANSITIONAL	TRIM/REMOVE
117364	TREE	63	61	2	7:1 TRANSITIONAL	TRIM/REMOVE
117372	TREE	64	63	1	7:1 TRANSITIONAL	TRIM/REMOVE
117396	TREE	64	63	1	7:1 TRANSITIONAL	TRIM/REMOVE
117404	TREE	63	62	1	7:1 TRANSITIONAL	TRIM/REMOVE
117412	TREE	63	63	0	7:1 TRANSITIONAL	TRIM/REMOVE
117948	TREE	58	58	0	7:1 TRANSITIONAL	TRIM/REMOVE
117956	TREE	57	57	0	7:1 TRANSITIONAL	TRIM/REMOVE
117996	TREE	55	54	1	7:1 TRANSITIONAL	TRIM/REMOVE
118012	TREE	56	56	0	7:1 TRANSITIONAL	TRIM/REMOVE
118044	TREE	61	61	0	7:1 TRANSITIONAL	TRIM/REMOVE
118052	TREE	62	62	0	7:1 TRANSITIONAL	TRIM/REMOVE
118300	TREE	54	54	0	7:1 TRANSITIONAL	TRIM/REMOVE
118340	TREE	51	50	1	7:1 TRANSITIONAL	TRIM/REMOVE
118628	TREE	59	52	8	7:1 TRANSITIONAL	TRIM/REMOVE
118636	TREE	58	54	5	7:1 TRANSITIONAL	TRIM/REMOVE
118676	TREE	53	51	2	7:1 TRANSITIONAL	TRIM/REMOVE
118980	TREE	57	50	7	7:1 TRANSITIONAL	TRIM/REMOVE
118988	TREE	55	51	4	7:1 TRANSITIONAL	TRIM/REMOVE
118996	TREE	53	50	2	7:1 TRANSITIONAL	TRIM/REMOVE
119092	TREE	56	55	1	7:1 TRANSITIONAL	TRIM/REMOVE
119100	TREE	59	56	3	7:1 TRANSITIONAL	TRIM/REMOVE
119108	TREE	60	58	2	7:1 TRANSITIONAL	TRIM/REMOVE
119116	TREE	58	57	1	7:1 TRANSITIONAL	TRIM/REMOVE
119124	TREE	62	59	4	7:1 TRANSITIONAL	TRIM/REMOVE
119156	TREE	63	63	0	7:1 TRANSITIONAL	TRIM/REMOVE
119220	TREE	58	59	0	7:1 TRANSITIONAL	TRIM/REMOVE
119228	TREE	58	56	2	7:1 TRANSITIONAL	TRIM/REMOVE
119236	TREE	62	52	9	7:1 TRANSITIONAL	TRIM/REMOVE
119244	TREE	62	50	12	7:1 TRANSITIONAL	TRIM/REMOVE
119452	TREE	61	51	11	7:1 TRANSITIONAL	TRIM/REMOVE
119572	TREE	57	55	1	7:1 TRANSITIONAL	TRIM/REMOVE
119628	TREE	59	54	5	7:1 TRANSITIONAL	TRIM/REMOVE
119700	TREE	52	53	0	7:1 TRANSITIONAL	TRIM/REMOVE
119716	TREE	60	58	2	7:1 TRANSITIONAL	TRIM/REMOVE
119724	TREE	60	59	1	7:1 TRANSITIONAL	TRIM/REMOVE
119740	TREE	56	55	1	7:1 TRANSITIONAL	TRIM/REMOVE
119988	TREE	63	63	0	7:1 TRANSITIONAL	TRIM/REMOVE
119996	TREE	64	61	3	7:1 TRANSITIONAL	TRIM/REMOVE
120004	TREE	67	59	7	7:1 TRANSITIONAL	TRIM/REMOVE
120012	TREE	64	60	5	7:1 TRANSITIONAL	TRIM/REMOVE
120020	TREE	64	62	3	7:1 TRANSITIONAL	TRIM/REMOVE
120028	TREE	63	62	1	7:1 TRANSITIONAL	TRIM/REMOVE
120036	TREE	65	63	2	7:1 TRANSITIONAL	TRIM/REMOVE
120044	TREE	64	64	0	7:1 TRANSITIONAL	TRIM/REMOVE
120076	TREE	64	63	1	7:1 TRANSITIONAL	TRIM/REMOVE
120084	TREE	65	62	2	7:1 TRANSITIONAL	TRIM/REMOVE
120092	TREE	65	62	3	7:1 TRANSITIONAL	TRIM/REMOVE
120100	TREE	65	63	2	7:1 TRANSITIONAL	TRIM/REMOVE
120116	TREE	62	62	0	7:1 TRANSITIONAL	TRIM/REMOVE
120132	TREE	64	63	2	7:1 TRANSITIONAL	TRIM/REMOVE
120140	TREE	65	62	4	7:1 TRANSITIONAL	TRIM/REMOVE
120148	TREE	65	61	4	7:1 TRANSITIONAL	TRIM/REMOVE
120156	TREE	65	61	4	7:1 TRANSITIONAL	TRIM/REMOVE
120164	TREE	65	60	5	7:1 TRANSITIONAL	TRIM/REMOVE
120172	TREE	65	60	5	7:1 TRANSITIONAL	TRIM/REMOVE
120180	TREE	64	59	5	7:1 TRANSITIONAL	TRIM/REMOVE
120188	TREE	65	58	7	7:1 TRANSITIONAL	TRIM/REMOVE
120196	TREE	64	56	7	7:1 TRANSITIONAL	TRIM/REMOVE
120204	TREE	64	56	8	7:1 TRANSITIONAL	TRIM/REMOVE
120212	TREE	64	57	7	7:1 TRANSITIONAL	TRIM/REMOVE
120220	TREE	62	55	7	7:1 TRANSITIONAL	TRIM/REMOVE
120228	TREE	64	56	7	7:1 TRANSITIONAL	TRIM/REMOVE
120236	TREE	63	59	3	7:1 TRANSITIONAL	TRIM/REMOVE
120244	TREE	64	60	4	7:1 TRANSITIONAL	TRIM/REMOVE
120252	TREE	62	58	4	7:1 TRANSITIONAL	TRIM/REMOVE
120260	TREE	56	54	2	7:1 TRANSITIONAL	TRIM/REMOVE
120268	TREE	57	55	2	7:1 TRANSITIONAL	TRIM/REMOVE
120276	TREE	59	57	2	7:1 TRANSITIONAL	TRIM/REMOVE
120284	TREE	60	57	3	7:1 TRANSITIONAL	TRIM/REMOVE
120292	TREE	59	57	3	7:1 TRANSITIONAL	TRIM/REMOVE
120300	TREE	62	58	4	7:1 TRANSITIONAL	TRIM/REMOVE
120308	TREE	63	58	5	7:1 TRANSITIONAL	TRIM/REMOVE
120316	TREE	62	59	2	7:1 TRANSITIONAL	TRIM/REMOVE
120324	TREE	61	60	1	7:1 TRANSITIONAL	TRIM/REMOVE
120332	TREE	59	59	0	7:1 TRANSITIONAL	TRIM/REMOVE
120348	TREE	60	59	1	7:1 TRANSITIONAL	TRIM/REMOVE
120364	TREE	61	61	1	7:1 TRANSITIONAL	TRIM/REMOVE
120372	TREE	61	62	0	7:1 TRANSITIONAL	TRIM/REMOVE
120380	TREE	61	60	0	7:1 TRANSITIONAL	TRIM/REMOVE
120388	TREE	61	61	0	7:1 TRANSITIONAL	TRIM/REMOVE

14 CFR PART 77 AIRPORT AIRSPACE OBSTRUCTION DATA TABLE

OBJECT DATA			SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE	PROPOSED DISPOSITION
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)				
120396	TREE	62	59	4	7:1 TRANSITIONAL	TRIM/REMOVE
120404	TREE	64	59	4	7:1 TRANSITIONAL	TRIM/REMOVE
120412	TREE	63	58	5	7:1 TRANSITIONAL	TRIM/REMOVE
120420	TREE	63	57	6	7:1 TRANSITIONAL	TRIM/REMOVE
120428	TREE	60	57	3	7:1 TRANSITIONAL	TRIM/REMOVE
120436	TREE	60	59	1	7:1 TRANSITIONAL	TRIM/REMOVE
120444	TREE	63	57	6	7:1 TRANSITIONAL	TRIM/REMOVE
120452	TREE	62	58	4	7:1 TRANSITIONAL	TRIM/REMOVE
120460	TREE	60	56	3	7:1 TRANSITIONAL	TRIM/REMOVE
120468	TREE	60	57	3	7:1 TRANSITIONAL	TRIM/REMOVE
120476	TREE	63	55	7	7:1 TRANSITIONAL	TRIM/REMOVE
120484	TREE	64	55	8	7:1 TRANSITIONAL	TRIM/REMOVE
120492	TREE	55	54	1	7:1 TRANSITIONAL	TRIM/REMOVE
120500	TREE	67	55	11	7:1 TRANSITIONAL	TRIM/REMOVE
120508	TREE	63	56	7	7:1 TRANSITIONAL	TRIM/REMOVE
120516	TREE	62	56	6	7:1 TRANSITIONAL	TRIM/REMOVE
120524	TREE	60	57	3	7:1 TRANSITIONAL	TRIM/REMOVE
120532	TREE	61	57	3	7:1 TRANSITIONAL	TRIM/REMOVE
120540	TREE	60	58	2	7:1 TRANSITIONAL	TRIM/REMOVE
120548	TREE	59	60	0	7:1 TRANSITIONAL	TRIM/REMOVE
120588	TREE	59	54	5	7:1 TRANSITIONAL	TRIM/REMOVE
120596	TREE	60	54	6	7:1 TRANSITIONAL	TRIM/REMOVE
120604	TREE	65	53	12	7:1 TRANSITIONAL	TRIM/REMOVE
120612	TREE	62	51	10	7:1 TRANSITIONAL	TRIM/REMOVE
120620	TREE	57	51	6	7:1 TRANSITIONAL	TRIM/REMOVE
120652	TREE	59	51	8	7:1 TRANSITIONAL	TRIM/REMOVE
120660	TREE	58	52	6	7:1 TRANSITIONAL	TRIM/REMOVE
120668	TREE	62	51	10	7:1 TRANSITIONAL	TRIM/REMOVE
120676	TREE	60	51	9	7:1 TRANSITIONAL	TRIM/REMOVE
120684	TREE	62	54	8	7:1 TRANSITIONAL	TRIM/REMOVE
120692	TREE	59	53	6	7:1 TRANSITIONAL	TRIM/REMOVE
120700	TREE	56	55	1	7:1 TRANSITIONAL	TRIM/REMOVE
120756	TREE	57	54	3	7:1 TRANSITIONAL	TRIM/REMOVE
120764	TREE	53	53	0	7:1 TRANSITIONAL	TRIM/REMOVE
120812	TREE	52	50	2	7:1 TRANSITIONAL	TRIM/REMOVE
120844	TREE	54	52	1	7:1 TRANSITIONAL	TRIM/REMOVE
120868	TREE	68	65	3	7:1 TRANSITIONAL	TRIM/REMOVE
120884	TREE	67	66	0	7:1 TRANSITIONAL	TRIM/REMOVE
120948	TREE	65	50	15	7:1 TRANSITIONAL	TRIM/REMOVE
121919	TREE	71	71	0	7:1 TRANSITIONAL	TRIM/REMOVE
121927	TREE	56	56	0	7:1 TRANSITIONAL	TRIM/REMOVE
121959	TREE	46	46	0	7:1 TRANSITIONAL	TRIM/REMOVE
122047	TREE	69	58	10	7:1 TRANSITIONAL	TRIM/REMOVE
122055	TREE	70	58	12	7:1 TRANSITIONAL	TRIM/REMOVE
122175	TREE	67	63	3	7:1 TRANSITIONAL	TRIM/REMOVE
122183	TREE	68	65	3	7:1 TRANSITIONAL	TRIM/REMOVE
122191	TREE	66	65	1	7:1 TRANSITIONAL	TRIM/REMOVE
122263	TREE	66	63	3	7:1 TRANSITIONAL	TRIM/REMOVE
122271	TREE	67	66	1	7:1 TRANSITIONAL	TRIM/REMOVE
122279	TREE	65	64	0	7:1 TRANSITIONAL	TRIM/REMOVE
122287	TREE	65	64	1	7:1 TRANSITIONAL	TRIM/REMOVE
122295	TREE	63	63	0	7:1 TRANSITIONAL	TRIM/REMOVE
122303	TREE	62	63	0	7:1 TRANSITIONAL	TRIM/REMOVE
122311	TREE	70	65	5	7:1 TRANSITIONAL	TRIM/REMOVE
122319	TREE	70	67	3	7:1 TRANSITIONAL	TRIM/REMOVE
122327	TREE	74	68	6	7:1 TRANSITIONAL	TRIM/REMOVE
122335	TREE	72	66	7	7:1 TRANSITIONAL	TRIM/REMOVE
122343	TREE	75	68	7	7:1 TRANSITIONAL	TRIM/REMOVE
122351	TREE	72	67	5	7:1 TRANSITIONAL	TRIM/REMOVE
122359	TREE	66	64	2	7:1 TRANSITIONAL	TRIM/REMOVE
122367	TREE	65	66	0	7:1 TRANSITIONAL	TRIM/REMOVE
122375	TREE	69	67	2	7:1 TRANSITIONAL	TRIM/REMOVE
122383	TREE	71	68	3	7:1 TRANSITIONAL	TRIM/REMOVE
122391	TREE	69	68	1	7:1 TRANSITIONAL	TRIM/REMOVE
122399	TREE	67	67	1	7:1 TRANSITIONAL	TRIM/REMOVE
122407	TREE	70	66	4	7:1 TRANSITIONAL	TRIM/REMOVE
122415	TREE	69	65	4	7:1 TRANSITIONAL	TRIM/REMOVE
122423	TREE	68	65	4	7:1 TRANSITIONAL	TRIM/REMOVE
122431	TREE	71	64	6	7:1 TRANSITIONAL	TRIM/REMOVE
122439	TREE	70	65	6	7:1 TRANSITIONAL	TRIM/REMOVE
122447	TREE	71	66	5	7:1 TRANSITIONAL	TRIM/REMOVE
122463	TREE	66	65	1	7:1 TRANSITIONAL	TRIM/REMOVE
122471	TREE	68	66	1	7:1 TRANSITIONAL	TRIM/REMOVE
122479	TREE	74	68	5	7:1 TRANSITIONAL	TRIM/REMOVE
122535	TREE	71	70	1	7:1 TRANSITIONAL	TRIM/REMOVE
122543	TREE	73	70	3	7:1 TRANSITIONAL	TRIM/REMOVE
122551	TREE	74	68	5	7:1 TRANSITIONAL	TRIM/REMOVE
122559	TREE	69	68	0	7:1 TRANSITIONAL	TRIM/REMOVE
122567	TREE	72	69	3	7:1 TRANSITIONAL	TRIM/REMOVE
122575	TREE	70	68	2	7:1 TRANSITIONAL	TRIM/REMOVE
122583	TREE	71	69	2	7:1 TRANSITIONAL	TRIM/REMOVE
122591	TREE	74	70	4	7:1 TRANSITIONAL	TRIM/REMOVE
122599	TREE	73	71	2	7:1 TRANSITIONAL	TRIM/REMOVE
122607	TREE	78	71	7	7:1 TRANSITIONAL	TRIM/REMOVE
122615	TREE	76	71	4	7:1 TRANSITIONAL	TRIM/REMOVE
122623	TREE	79	71	7	7:1 TRANSITIONAL	TRIM/REMOVE
122631	TREE	75	70	5	7:1 TRANSITIONAL	TRIM/REMOVE
122639	TREE	74	71	3	7:1 TRANSITIONAL	TRIM/REMOVE
122647	TREE	74	74	0	7:1 TRANSITIONAL	TRIM/REMOVE
122655	TREE	73	73	0	7:1 TRANSITIONAL	TRIM/REMOVE

NOTES:

1. DUE TO THE LARGE NUMBER OF OBJECTS SURVEYED AND TO LIMIT THE NEED OF ADDITIONAL SHEETS IN THE SET, ONLY OBJECTS THAT PENETRATE THE PART 77 IMAGINARY AIRSPACE SURFACES ARE INCLUDED IN THE DATA TABLES. ELECTRIC FILES PROVIDED TO THE AIRPORT INCLUDE ALL OBJECTS THAT PENETRATE OR ARE WITHIN 15 FEET OF THE PART 77 IMAGINARY AIRSPACE SURFACES.
2. REFER TO SHEET 8 FOR ADDITIONAL OBSTRUCTION DATA TABLES.
3. OBSTRUCTION SURVEY COMPLETED IN MAY 2023 AND COMPLIES TO FAA AC 150/5300-18B.
4. CLEARANCE OR PENETRATION MAY NOT MATCH OBJECT ELEVATION MINUS SURFACE ELEVATION DUE TO ROUNDING.
5. REFER TO SHEET 6 FOR GENERAL NOTES.

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REGIONAL AIRPORT

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3400 CHEROKEE DRIVE
VERO BEACH, FL 32960
PHONE (772) 978-4930

VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	6-8_AIRSPACE.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

PART 77 AIRSPACE OBSTRUCTION DATA (SHEET 1 OF 2)

AUG 06, 2024 5:01 PM ALEXA02176
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14 CFR PART 77 AIRPORT AIRSPACE OBSTRUCTION DATA TABLE

OBJECT DATA			SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE	PROPOSED DISPOSITION
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)				
122663	TREE	74	74	0	7:1 TRANSITIONAL	TRIM/REMOVE
122671	TREE	74	73	1	7:1 TRANSITIONAL	TRIM/REMOVE
122679	TREE	73	71	2	7:1 TRANSITIONAL	TRIM/REMOVE
122687	TREE	74	71	3	7:1 TRANSITIONAL	TRIM/REMOVE
122695	TREE	74	72	2	7:1 TRANSITIONAL	TRIM/REMOVE
122703	TREE	72	73	0	7:1 TRANSITIONAL	TRIM/REMOVE
122735	TREE	79	75	4	7:1 TRANSITIONAL	TRIM/REMOVE
122743	TREE	76	73	3	7:1 TRANSITIONAL	TRIM/REMOVE
122751	TREE	75	75	0	7:1 TRANSITIONAL	TRIM/REMOVE
122871	TREE	80	78	2	7:1 TRANSITIONAL	TRIM/REMOVE
122879	TREE	79	79	0	7:1 TRANSITIONAL	TRIM/REMOVE
122935	TREE	79	77	2	7:1 TRANSITIONAL	TRIM/REMOVE
123079	TREE	72	72	0	7:1 TRANSITIONAL	TRIM/REMOVE
123111	TREE	70	70	0	7:1 TRANSITIONAL	TRIM/REMOVE
123119	TREE	69	68	1	7:1 TRANSITIONAL	TRIM/REMOVE
123127	TREE	69	67	2	7:1 TRANSITIONAL	TRIM/REMOVE
123135	TREE	71	69	2	7:1 TRANSITIONAL	TRIM/REMOVE
123143	TREE	68	68	0	7:1 TRANSITIONAL	TRIM/REMOVE
123151	TREE	68	65	3	7:1 TRANSITIONAL	TRIM/REMOVE
123159	TREE	69	66	4	7:1 TRANSITIONAL	TRIM/REMOVE
123167	TREE	67	67	1	7:1 TRANSITIONAL	TRIM/REMOVE
123175	TREE	68	66	2	7:1 TRANSITIONAL	TRIM/REMOVE
123183	TREE	69	64	5	7:1 TRANSITIONAL	TRIM/REMOVE
123191	TREE	67	64	2	7:1 TRANSITIONAL	TRIM/REMOVE
123199	TREE	63	64	0	7:1 TRANSITIONAL	TRIM/REMOVE
123207	TREE	64	62	2	7:1 TRANSITIONAL	TRIM/REMOVE
123215	TREE	65	64	1	7:1 TRANSITIONAL	TRIM/REMOVE
123231	TREE	65	65	0	7:1 TRANSITIONAL	TRIM/REMOVE
123239	TREE	69	68	1	7:1 TRANSITIONAL	TRIM/REMOVE
123431	TREE	70	69	1	7:1 TRANSITIONAL	TRIM/REMOVE
123439	TREE	69	66	3	7:1 TRANSITIONAL	TRIM/REMOVE
123447	TREE	69	66	2	7:1 TRANSITIONAL	TRIM/REMOVE
123455	TREE	70	67	3	7:1 TRANSITIONAL	TRIM/REMOVE
123463	TREE	70	69	1	7:1 TRANSITIONAL	TRIM/REMOVE
123471	TREE	70	69	1	7:1 TRANSITIONAL	TRIM/REMOVE
123479	TREE	71	71	0	7:1 TRANSITIONAL	TRIM/REMOVE
123487	TREE	69	69	0	7:1 TRANSITIONAL	TRIM/REMOVE
123495	TREE	68	67	1	7:1 TRANSITIONAL	TRIM/REMOVE
123503	TREE	70	67	2	7:1 TRANSITIONAL	TRIM/REMOVE
123511	TREE	67	66	1	7:1 TRANSITIONAL	TRIM/REMOVE
123519	TREE	68	68	0	7:1 TRANSITIONAL	TRIM/REMOVE
123527	TREE	70	68	2	7:1 TRANSITIONAL	TRIM/REMOVE
123535	TREE	70	70	0	7:1 TRANSITIONAL	TRIM/REMOVE
123551	TREE	72	71	1	7:1 TRANSITIONAL	TRIM/REMOVE
123559	TREE	70	70	0	7:1 TRANSITIONAL	TRIM/REMOVE
123615	TREE	67	64	3	7:1 TRANSITIONAL	TRIM/REMOVE
123623	TREE	66	64	2	7:1 TRANSITIONAL	TRIM/REMOVE
123631	TREE	67	65	2	7:1 TRANSITIONAL	TRIM/REMOVE
123647	TREE	63	64	0	7:1 TRANSITIONAL	TRIM/REMOVE
123655	TREE	64	63	1	7:1 TRANSITIONAL	TRIM/REMOVE
123671	TREE	68	67	1	7:1 TRANSITIONAL	TRIM/REMOVE
123679	TREE	68	67	1	7:1 TRANSITIONAL	TRIM/REMOVE
123687	TREE	68	67	2	7:1 TRANSITIONAL	TRIM/REMOVE
123695	TREE	68	66	2	7:1 TRANSITIONAL	TRIM/REMOVE
123703	TREE	66	66	0	7:1 TRANSITIONAL	TRIM/REMOVE
123711	TREE	70	67	2	7:1 TRANSITIONAL	TRIM/REMOVE
123719	TREE	69	69	1	7:1 TRANSITIONAL	TRIM/REMOVE
123727	TREE	72	69	3	7:1 TRANSITIONAL	TRIM/REMOVE
123735	TREE	71	70	1	7:1 TRANSITIONAL	TRIM/REMOVE
124047	TREE	68	67	1	7:1 TRANSITIONAL	TRIM/REMOVE
124087	TREE	70	65	5	7:1 TRANSITIONAL	TRIM/REMOVE
124103	TREE	69	67	2	7:1 TRANSITIONAL	TRIM/REMOVE
124111	TREE	70	67	2	7:1 TRANSITIONAL	TRIM/REMOVE
124119	TREE	69	68	1	7:1 TRANSITIONAL	TRIM/REMOVE
124519	TREE	74	72	2	7:1 TRANSITIONAL	TRIM/REMOVE
124527	TREE	73	72	2	7:1 TRANSITIONAL	TRIM/REMOVE
124551	TREE	70	67	3	7:1 TRANSITIONAL	TRIM/REMOVE
124559	TREE	70	68	2	7:1 TRANSITIONAL	TRIM/REMOVE
124567	TREE	69	68	1	7:1 TRANSITIONAL	TRIM/REMOVE
124615	TREE	62	62	0	7:1 TRANSITIONAL	TRIM/REMOVE
124623	TREE	64	62	2	7:1 TRANSITIONAL	TRIM/REMOVE
124631	TREE	64	63	0	7:1 TRANSITIONAL	TRIM/REMOVE
124647	TREE	63	62	0	7:1 TRANSITIONAL	TRIM/REMOVE
124655	TREE	65	64	1	7:1 TRANSITIONAL	TRIM/REMOVE
124663	TREE	68	65	4	7:1 TRANSITIONAL	TRIM/REMOVE
124671	TREE	72	66	5	7:1 TRANSITIONAL	TRIM/REMOVE
124679	TREE	68	68	0	7:1 TRANSITIONAL	TRIM/REMOVE
124687	TREE	69	69	0	7:1 TRANSITIONAL	TRIM/REMOVE
124767	TREE	65	64	0	7:1 TRANSITIONAL	TRIM/REMOVE
124775	TREE	63	63	1	7:1 TRANSITIONAL	TRIM/REMOVE
124783	TREE	65	63	2	7:1 TRANSITIONAL	TRIM/REMOVE
124791	TREE	67	66	2	7:1 TRANSITIONAL	TRIM/REMOVE
124799	TREE	67	67	0	7:1 TRANSITIONAL	TRIM/REMOVE
124807	TREE	70	67	4	7:1 TRANSITIONAL	TRIM/REMOVE
124815	TREE	69	68	1	7:1 TRANSITIONAL	TRIM/REMOVE
124823	TREE	71	69	2	7:1 TRANSITIONAL	TRIM/REMOVE
124831	TREE	71	69	2	7:1 TRANSITIONAL	TRIM/REMOVE
124839	TREE	72	71	2	7:1 TRANSITIONAL	TRIM/REMOVE
124903	TREE	71	65	6	7:1 TRANSITIONAL	TRIM/REMOVE
124911	TREE	70	64	7	7:1 TRANSITIONAL	TRIM/REMOVE

14 CFR PART 77 AIRPORT AIRSPACE OBSTRUCTION DATA TABLE

OBJECT DATA			SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE	PROPOSED DISPOSITION
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)				
124919	TREE	69	64	5	7:1 TRANSITIONAL	TRIM/REMOVE
124935	TREE	69	66	3	7:1 TRANSITIONAL	TRIM/REMOVE
124943	TREE	77	67	10	7:1 TRANSITIONAL	TRIM/REMOVE
124951	TREE	73	68	4	7:1 TRANSITIONAL	TRIM/REMOVE
124967	TREE	68	69	0	7:1 TRANSITIONAL	TRIM/REMOVE
124991	TREE	75	66	9	7:1 TRANSITIONAL	TRIM/REMOVE
124999	TREE	71	61	10	7:1 TRANSITIONAL	TRIM/REMOVE
125007	TREE	75	72	3	7:1 TRANSITIONAL	TRIM/REMOVE
125095	TREE	59	57	1	7:1 TRANSITIONAL	TRIM/REMOVE
125143	TREE	53	52	1	7:1 TRANSITIONAL	TRIM/REMOVE
125191	TREE	49	49	0	7:1 TRANSITIONAL	TRIM/REMOVE
125199	TREE	51	51	0	7:1 TRANSITIONAL	TRIM/REMOVE
125207	TREE	49	49	0	7:1 TRANSITIONAL	TRIM/REMOVE
125239	TREE	107	87	19	7:1 TRANSITIONAL	TRIM/REMOVE
125247	TREE	101	90	11	7:1 TRANSITIONAL	TRIM/REMOVE
125255	TREE	100	91	9	7:1 TRANSITIONAL	TRIM/REMOVE
125287	TREE	51	50	0	7:1 TRANSITIONAL	TRIM/REMOVE
125415	TREE	51	50	1	7:1 TRANSITIONAL	TRIM/REMOVE
125535	TREE	74	74	1	7:1 TRANSITIONAL	TRIM/REMOVE
125551	TREE	75	74	1	7:1 TRANSITIONAL	TRIM/REMOVE
125559	TREE	75	74	1	7:1 TRANSITIONAL	TRIM/REMOVE
125567	TREE	70	70	1	7:1 TRANSITIONAL	TRIM/REMOVE
125607	TREE	72	73	0	7:1 TRANSITIONAL	TRIM/REMOVE
126954	TREE	55	55	0	7:1 TRANSITIONAL	TRIM/REMOVE
126962	TREE	69	59	10	7:1 TRANSITIONAL	TRIM/REMOVE
126970	TREE	67	61	5	7:1 TRANSITIONAL	TRIM/REMOVE
126978	TREE	63	61	2	7:1 TRANSITIONAL	TRIM/REMOVE
127050	TREE	57	56	1	7:1 TRANSITIONAL	TRIM/REMOVE
127098	TREE	63	62	1	7:1 TRANSITIONAL	TRIM/REMOVE
127114	TREE	66	66	0	7:1 TRANSITIONAL	TRIM/REMOVE
127258	TREE	83	74	10	7:1 TRANSITIONAL	TRIM/REMOVE
127266	TREE	81	79	2	7:1 TRANSITIONAL	TRIM/REMOVE
127274	TREE	80	79	1	7:1 TRANSITIONAL	TRIM/REMOVE
127282	TREE	81	80	0	7:1 TRANSITIONAL	TRIM/REMOVE
127306	TREE	87	84	3	7:1 TRANSITIONAL	TRIM/REMOVE
127322	TREE	82	82	1	7:1 TRANSITIONAL	TRIM/REMOVE
127330	TREE	91	80	11	7:1 TRANSITIONAL	TRIM/REMOVE
127338	TREE	90	75	15	7:1 TRANSITIONAL	TRIM/REMOVE
127346	TREE	79	73	6	7:1 TRANSITIONAL	TRIM/REMOVE
127354	TREE	80	71	9	7:1 TRANSITIONAL	TRIM/REMOVE
127362	TREE	78	68	10	7:1 TRANSITIONAL	TRIM/REMOVE
127370	TREE	73	68	5	7:1 TRANSITIONAL	TRIM/REMOVE
127394	TREE	73	70	3	7:1 TRANSITIONAL	TRIM/REMOVE
127402	TREE	74	71	4	7:1 TRANSITIONAL	TRIM/REMOVE
127450	TREE	76	76	1	7:1 TRANSITIONAL	TRIM/REMOVE
127458	TREE	82	79	4	7:1 TRANSITIONAL	TRIM/REMOVE
127506	TREE	86	85	1	7:1 TRANSITIONAL	TRIM/REMOVE
127514	TREE	85	85	0	7:1 TRANSITIONAL	TRIM/REMOVE
127522	TREE	89	84	4	7:1 TRANSITIONAL	TRIM/REMOVE
127530	TREE	88	86	2	7:1 TRANSITIONAL	TRIM/REMOVE
127538	TREE	89	88	1	7:1 TRANSITIONAL	TRIM/REMOVE
127626	TREE	57	55	1	7:1 TRANSITIONAL	TRIM/REMOVE
127962	TREE	60	56	3	7:1 TRANSITIONAL	TRIM/REMOVE
127970	TREE	63	57	6	7:1 TRANSITIONAL	TRIM/REMOVE
130639	TREE	69	68	0	7:1 TRANSITIONAL	TRIM/REMOVE
130655	TREE	69	69	1	7:1 TRANSITIONAL	TRIM/REMOVE
130798	TREE	53	52	1	7:1 TRANSITIONAL	TRIM/REMOVE

NOTES:

1. DUE TO THE LARGE NUMBER OF OBJECTS SURVEYED AND TO LIMIT THE NEED OF ADDITIONAL SHEETS IN THE SET, ONLY OBJECTS THAT PENETRATE THE PART 77 IMAGINARY AIRSPACE SURFACES ARE INCLUDED IN THE DATA TABLES. ELECTRIC FILES PROVIDED TO THE AIRPORT INCLUDE ALL OBJECTS THAT PENETRATE OR ARE WITHIN 15 FEET OF THE PART 77 IMAGINARY AIRSPACE SURFACES.
2. REFER TO SHEET 7 FOR ADDITIONAL OBSTRUCTION DATA TABLES.
3. OBSTRUCTION SURVEY COMPLETED IN MAY 2023 AND COMPLIES TO FAA AC 150/5300-18B.
4. CLEARANCE OR PENETRATION MAY NOT MATCH OBJECT ELEVATION MINUS SURFACE ELEVATION DUE TO ROUNDING.
5. REFER TO SHEET 6 FOR GENERAL NOTES.

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VERO BEACH
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(VRB)

AIRPORT LAYOUT PLAN
DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	6-8_AIRSPACE.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

PART 77 AIRSPACE
OBSTRUCTION DATA
(SHEET 2 OF 2)

AUG 06, 2024 5:01 PM ALEXA02176
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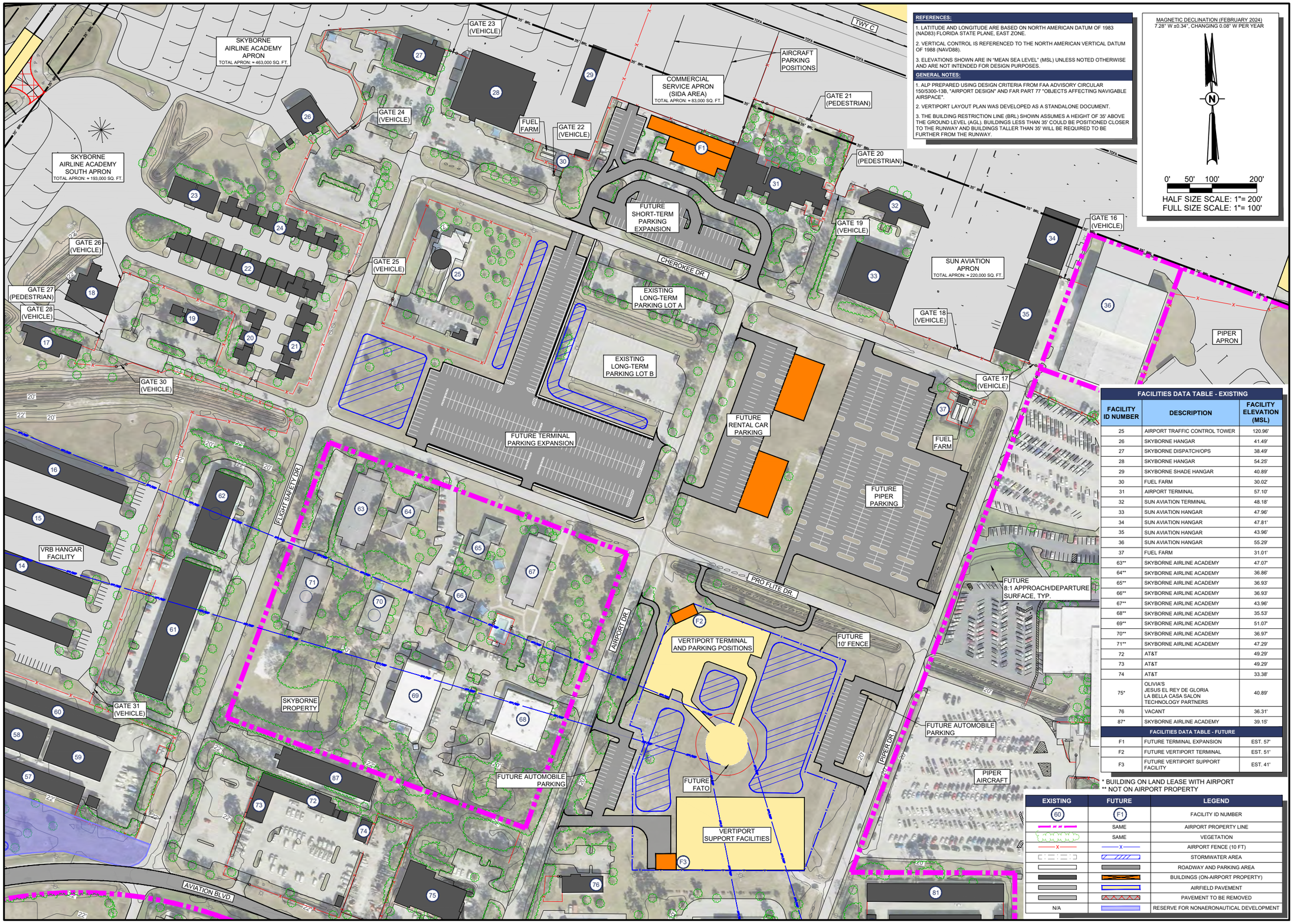

REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. VERTIPORT LAYOUT PLAN WAS DEVELOPED AS A STANDALONE DOCUMENT.
3. THE BUILDING RESTRICTION LINE (BRL) SHOWN ASSUMES A HEIGHT OF 35' ABOVE THE GROUND LEVEL (AGL). BUILDINGS LESS THAN 35' COULD BE POSITIONED CLOSER TO THE RUNWAY AND BUILDINGS TALLER THAN 35' WILL BE REQUIRED TO BE FURTHER FROM THE RUNWAY.

MAGNETIC DECLINATION (FEBRUARY 2024)
7.28° W ±0.34', CHANGING 0.08' W PER YEAR

0' 50' 100' 200'
HALF SIZE SCALE: 1"= 200'
FULL SIZE SCALE: 1"= 100'

FACILITIES DATA TABLE - EXISTING

FACILITY ID NUMBER	DESCRIPTION	FACILITY ELEVATION (MSL)
25	AIRPORT TRAFFIC CONTROL TOWER	120.96'
26	SKYBORNE HANGAR	41.49'
27	SKYBORNE DISPATCH/OPS	38.49'
28	SKYBORNE HANGAR	54.25'
29	SKYBORNE SHADE HANGAR	40.89'
30	FUEL FARM	30.02'
31	AIRPORT TERMINAL	57.10'
32	SUN AVIATION TERMINAL	48.18'
33	SUN AVIATION HANGAR	47.96'
34	SUN AVIATION HANGAR	47.81'
35	SUN AVIATION HANGAR	43.96'
36	SUN AVIATION HANGAR	55.29'
37	FUEL FARM	31.01'
63**	SKYBORNE AIRLINE ACADEMY	47.07'
64**	SKYBORNE AIRLINE ACADEMY	36.86'
65**	SKYBORNE AIRLINE ACADEMY	36.93'
66**	SKYBORNE AIRLINE ACADEMY	36.93'
67**	SKYBORNE AIRLINE ACADEMY	43.96'
68**	SKYBORNE AIRLINE ACADEMY	35.53'
69**	SKYBORNE AIRLINE ACADEMY	51.07'
70**	SKYBORNE AIRLINE ACADEMY	36.97'
71**	SKYBORNE AIRLINE ACADEMY	47.29'
72	AT&T	49.29'
73	AT&T	49.29'
74	AT&T	33.38'
75*	OLIVIA'S JESUS EL REY DE GLORIA LA BELLA CASA SALON TECHNOLOGY PARTNERS	40.89'
76	VACANT	36.31'
87*	SKYBORNE AIRLINE ACADEMY	39.15'
FACILITIES DATA TABLE - FUTURE		
F1	FUTURE TERMINAL EXPANSION	EST. 57'
F2	FUTURE VERTIPORT TERMINAL	EST. 51'
F3	FUTURE VERTIPORT SUPPORT FACILITY	EST. 41'

* BUILDING ON LAND LEASE WITH AIRPORT
** NOT ON AIRPORT PROPERTY

EXISTING	FUTURE	LEGEND
60	F1	FACILITY ID NUMBER
	SAME	AIRPORT PROPERTY LINE
	SAME	VEGETATION
X	X	AIRPORT FENCE (10 FT)
		STORMWATER AREA
		ROADWAY AND PARKING AREA
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
N/A		RESERVE FOR NONAERONAUTICAL DEVELOPMENT

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VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE: AUGUST 2024
PROJECT NO: 20A0069W01
CAD FILE: 9_TAD_CENTRAL.DWG
DESIGN BY: JA
DRAWN BY: JA
REVIEWED BY: SZ

SHEET TITLE

TERMINAL AREA DRAWING - CENTRAL

AUG 06, 2024 5:02 PM ALEXA02176
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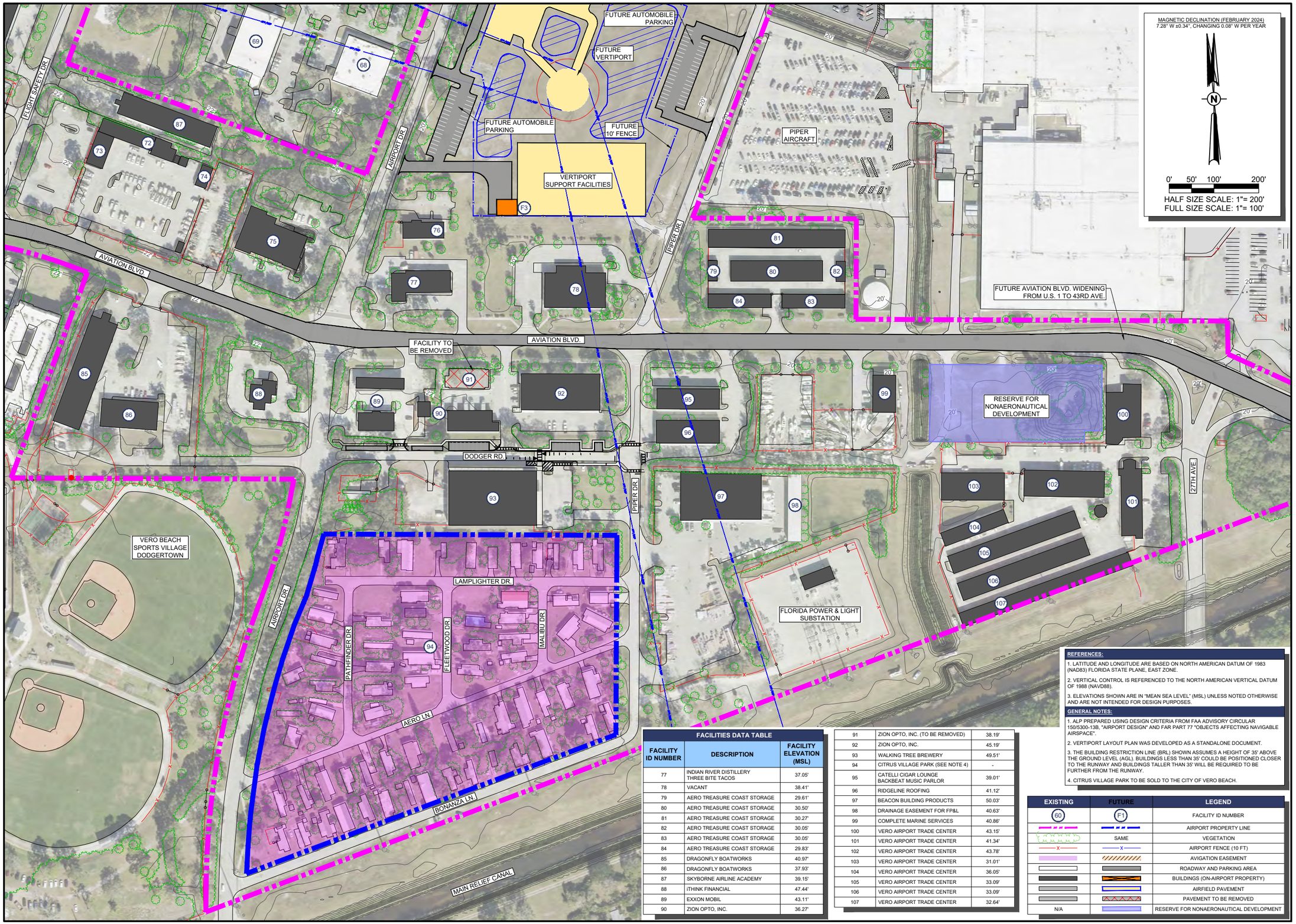

FACILITIES DATA TABLE		
FACILITY ID NUMBER	DESCRIPTION	FACILITY ELEVATION (MSL)
77	INDIAN RIVER DISTILLERY THREE BITE TACOS	37.05'
78	VACANT	38.41'
79	AERO TREASURE COAST STORAGE	29.61'
80	AERO TREASURE COAST STORAGE	30.50'
81	AERO TREASURE COAST STORAGE	30.27'
82	AERO TREASURE COAST STORAGE	30.05'
83	AERO TREASURE COAST STORAGE	30.05'
84	AERO TREASURE COAST STORAGE	29.83'
85	DRAGONFLY BOATWORKS	40.97'
86	DRAGONFLY BOATWORKS	37.93'
87	SKYBORNE AIRLINE ACADEMY	39.15'
88	iTHINK FINANCIAL	47.44'
89	EXXON MOBIL	43.11'
90	ZION OPTO, INC.	36.27'
91	ZION OPTO, INC. (TO BE REMOVED)	38.19'
92	ZION OPTO, INC.	45.19'
93	WALKING TREE BREWERY	49.51'
94	CITRUS VILLAGE PARK (SEE NOTE 4)	-
95	CATELLI CIGAR LOUNGE BACKBEAT MUSIC PARLOR	39.01'
96	RIDGELINE ROOFING	41.12'
97	BEACON BUILDING PRODUCTS	50.03'
98	DRAINAGE EASEMENT FOR FP&L	40.63'
99	COMPLETE MARINE SERVICES	40.86'
100	VERO AIRPORT TRADE CENTER	43.15'
101	VERO AIRPORT TRADE CENTER	41.34'
102	VERO AIRPORT TRADE CENTER	43.78'
103	VERO AIRPORT TRADE CENTER	31.01'
104	VERO AIRPORT TRADE CENTER	36.05'
105	VERO AIRPORT TRADE CENTER	33.09'
106	VERO AIRPORT TRADE CENTER	33.09'
107	VERO AIRPORT TRADE CENTER	32.64'

REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. VERTIPORT LAYOUT PLAN WAS DEVELOPED AS A STANDALONE DOCUMENT.
3. THE BUILDING RESTRICTION LINE (BRL) SHOWN ASSUMES A HEIGHT OF 35' ABOVE THE GROUND LEVEL (AGL). BUILDINGS LESS THAN 35' COULD BE POSITIONED CLOSER TO THE RUNWAY AND BUILDINGS TALLER THAN 35' WILL BE REQUIRED TO BE FURTHER FROM THE RUNWAY.
4. CITRUS VILLAGE PARK TO BE SOLD TO THE CITY OF VERO BEACH.

EXISTING	FUTURE	LEGEND
60	F1	FACILITY ID NUMBER
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
		AVIGATION EASEMENT
		ROADWAY AND PARKING AREA
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
N/A		RESERVE FOR NONAERONAUTICAL DEVELOPMENT

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PHONE (772) 978-4930

VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	10_TAD_SOUTH.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

TERMINAL AREA DRAWING - SOUTH

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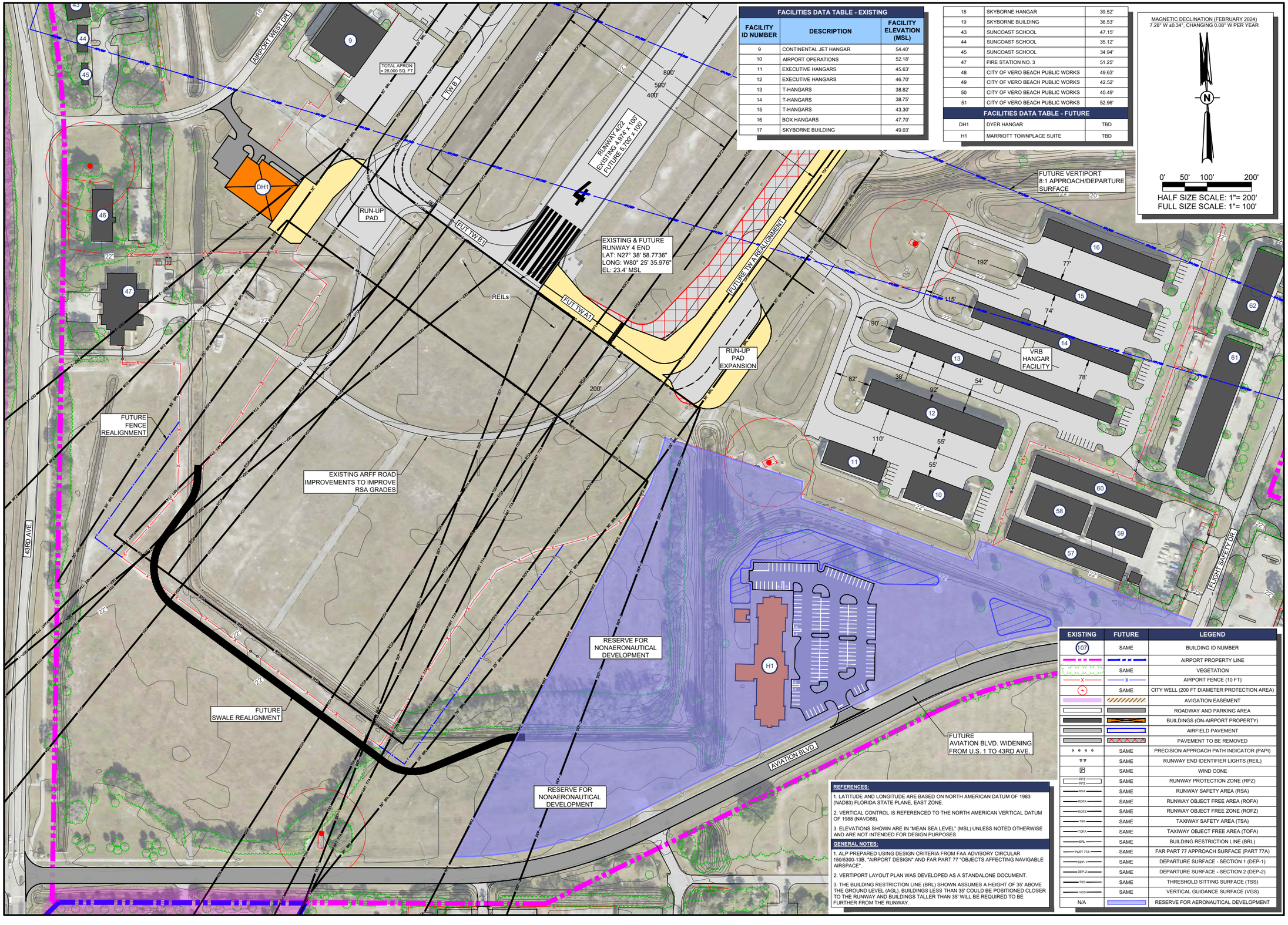

FACILITIES DATA TABLE - EXISTING		
FACILITY ID NUMBER	DESCRIPTION	FACILITY ELEVATION (MSL)
9	CONTINENTAL JET HANGAR	54.40'
10	AIRPORT OPERATIONS	52.18'
11	EXECUTIVE HANGARS	45.63'
12	EXECUTIVE HANGARS	46.70'
13	T-HANGARS	38.82'
14	T-HANGARS	38.75'
15	T-HANGARS	43.30'
16	BOX HANGARS	47.70'
17	SKYBORNE BUILDING	49.03'
18	SKYBORNE HANGAR	39.52'
19	SKYBORNE BUILDING	36.53'
43	SUNCOAST SCHOOL	47.15'
44	SUNCOAST SCHOOL	35.12'
45	SUNCOAST SCHOOL	34.94'
47	FIRE STATION NO. 3	51.25'
48	CITY OF VERO BEACH PUBLIC WORKS	49.63'
49	CITY OF VERO BEACH PUBLIC WORKS	42.52'
50	CITY OF VERO BEACH PUBLIC WORKS	40.49'
51	CITY OF VERO BEACH PUBLIC WORKS	52.96'
FACILITIES DATA TABLE - FUTURE		
DH1	DYER HANGAR	TBD
H1	MARRIOTT TOWNPLACE SUITE	TBD

EXISTING	FUTURE	LEGEND
107	SAME	BUILDING ID NUMBER
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
	SAME	CITY WELL (200 FT DIAMETER PROTECTION AREA)
		AVIGATION EASEMENT
		ROADWAY AND PARKING AREA
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
	SAME	PRECISION APPROACH PATH INDICATOR (PAPI)
	SAME	RUNWAY END IDENTIFIER LIGHTS (REIL)
	SAME	WIND CONE
RPZ	SAME	RUNWAY PROTECTION ZONE (RPZ)
RSA	SAME	RUNWAY SAFETY AREA (RSA)
ROFA	SAME	RUNWAY OBJECT FREE AREA (ROFA)
ROFZ	SAME	RUNWAY OBJECT FREE ZONE (ROFZ)
TSA	SAME	TAXIWAY SAFETY AREA (TSA)
TOFA	SAME	TAXIWAY OBJECT FREE AREA (TOFA)
BRL	SAME	BUILDING RESTRICTION LINE (BRL)
PART 77A	SAME	FAR PART 77 APPROACH SURFACE (PART 77A)
DEP-1	SAME	DEPARTURE SURFACE - SECTION 1 (DEP-1)
DEP-2	SAME	DEPARTURE SURFACE - SECTION 2 (DEP-2)
TSS	SAME	THRESHOLD SITTING SURFACE (TSS)
VGS	SAME	VERTICAL GUIDANCE SURFACE (VGS)
N/A		RESERVE FOR AERONAUTICAL DEVELOPMENT

REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. VERTIPORT LAYOUT PLAN WAS DEVELOPED AS A STANDALONE DOCUMENT.
3. THE BUILDING RESTRICTION LINE (BRL) SHOWN ASSUMES A HEIGHT OF 35' ABOVE THE GROUND LEVEL (AGL). BUILDINGS LESS THAN 35' COULD BE POSITIONED CLOSER TO THE RUNWAY AND BUILDINGS TALLER THAN 35' WILL BE REQUIRED TO BE FURTHER FROM THE RUNWAY.

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VERO BEACH, FL 32960
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VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	11_TAD_SOUTHWEST.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

TERMINAL AREA DRAWING - SOUTHWEST

AUG 06, 2024 5:04 PM ALEXA02176
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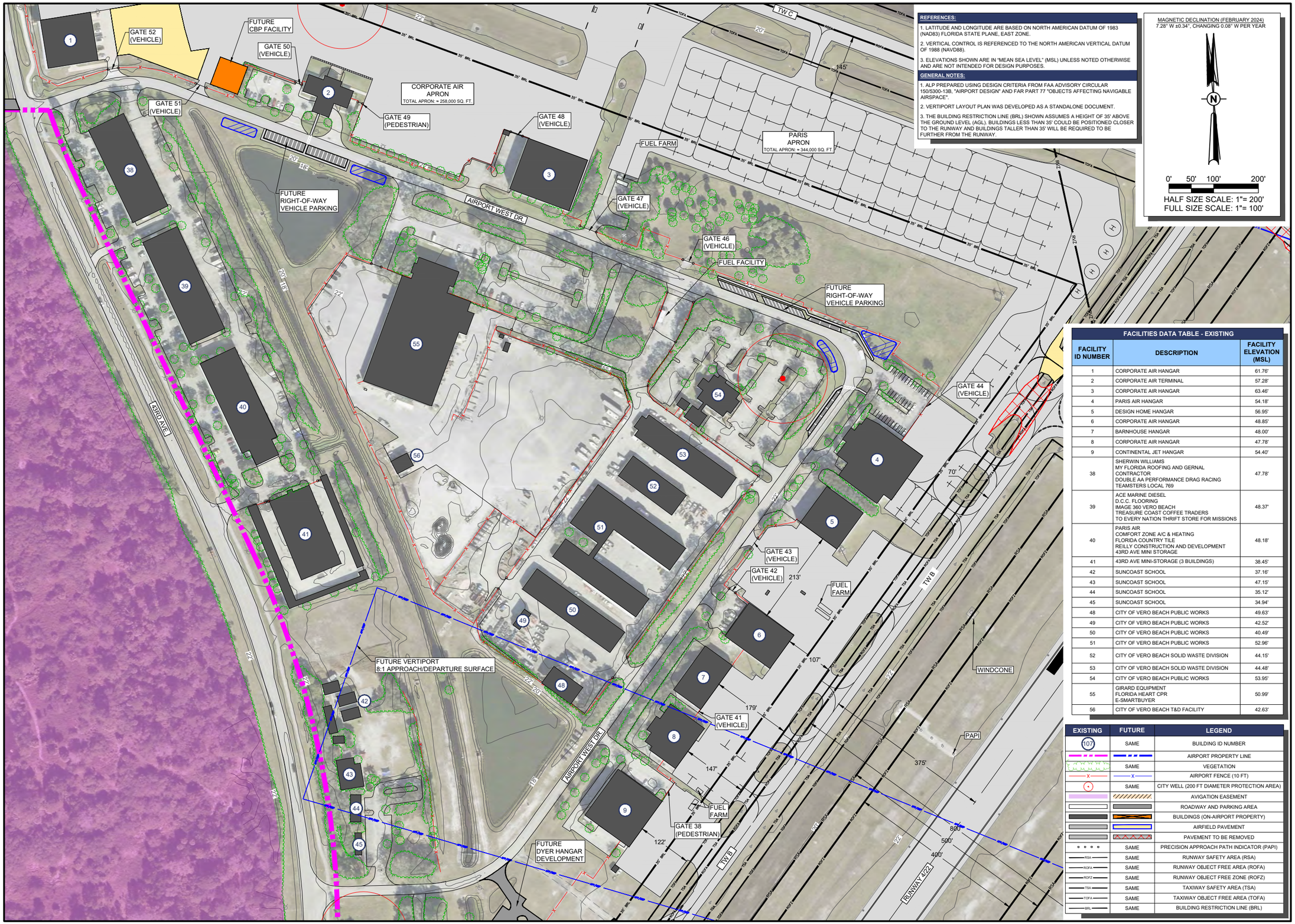

REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. VERTIPORT LAYOUT PLAN WAS DEVELOPED AS A STANDALONE DOCUMENT.
3. THE BUILDING RESTRICTION LINE (BRL) SHOWN ASSUMES A HEIGHT OF 35' ABOVE THE GROUND LEVEL (AGL). BUILDINGS LESS THAN 35' COULD BE POSITIONED CLOSER TO THE RUNWAY AND BUILDINGS TALLER THAN 35' WILL BE REQUIRED TO BE FURTHER FROM THE RUNWAY.

MAGNETIC DECLINATION (FEBRUARY 2024)
7.28° W ±0.34°, CHANGING 0.08° W PER YEAR

0' 50' 100' 200'
HALF SIZE SCALE: 1"= 200'
FULL SIZE SCALE: 1"= 100'

FACILITIES DATA TABLE - EXISTING

FACILITY ID NUMBER	DESCRIPTION	FACILITY ELEVATION (MSL)
1	CORPORATE AIR HANGAR	61.76'
2	CORPORATE AIR TERMINAL	57.28'
3	CORPORATE AIR HANGAR	63.46'
4	PARIS AIR HANGAR	54.18'
5	DESIGN HOME HANGAR	56.95'
6	CORPORATE AIR HANGAR	48.85'
7	BARNHOUSE HANGAR	48.00'
8	CORPORATE AIR HANGAR	47.78'
9	CONTINENTAL JET HANGAR	54.40'
38	SHERWIN WILLIAMS MY FLORIDA ROOFING AND GERNAL CONTRACTOR DOUBLE AA PERFORMANCE DRAG RACING TEAMSTERS LOCAL 769	47.78'
39	ACE MARINE DIESEL D.C.C. FLOORING IMAGE 360 VERO BEACH TREASURE COAST COFFEE TRADERS TO EVERY NATION THRIFT STORE FOR MISSIONS	48.37'
40	PARIS AIR COMFORT ZONE A/C & HEATING FLORIDA COUNTRY TILE REILLY CONSTRUCTION AND DEVELOPMENT 43RD AVE MINI STORAGE	48.18'
41	43RD AVE MINI-STORAGE (3 BUILDINGS)	38.45'
42	SUNCOAST SCHOOL	37.16'
43	SUNCOAST SCHOOL	47.15'
44	SUNCOAST SCHOOL	35.12'
45	SUNCOAST SCHOOL	34.94'
48	CITY OF VERO BEACH PUBLIC WORKS	49.63'
49	CITY OF VERO BEACH PUBLIC WORKS	42.52'
50	CITY OF VERO BEACH PUBLIC WORKS	40.49'
51	CITY OF VERO BEACH PUBLIC WORKS	52.96'
52	CITY OF VERO BEACH SOLID WASTE DIVISION	44.15'
53	CITY OF VERO BEACH SOLID WASTE DIVISION	44.48'
54	CITY OF VERO BEACH PUBLIC WORKS	53.95'
55	GIRARD EQUIPMENT FLORIDA HEART CPR E-SMARTBUYER	50.99'
56	CITY OF VERO BEACH T&D FACILITY	42.63'

EXISTING	FUTURE	LEGEND
107	SAME	BUILDING ID NUMBER
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
	SAME	CITY WELL (200 FT DIAMETER PROTECTION AREA)
		AVIGATION EASEMENT
		ROADWAY AND PARKING AREA
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
	SAME	PRECISION APPROACH PATH INDICATOR (PAPI)
RSA	SAME	RUNWAY SAFETY AREA (RSA)
ROFA	SAME	RUNWAY OBJECT FREE AREA (ROFA)
ROFZ	SAME	RUNWAY OBJECT FREE ZONE (ROFZ)
TSA	SAME	TAXIWAY SAFETY AREA (TSA)
TOFA	SAME	TAXIWAY OBJECT FREE AREA (TOFA)
BRL	SAME	BUILDING RESTRICTION LINE (BRL)

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VERO BEACH, FL 32960
PHONE (772) 978-4930

VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE: AUGUST 2024
PROJECT NO: 20A0069W01
CAD FILE: 12_TAD_WEST.DWG
DESIGN BY: JA
DRAWN BY: JA
REVIEWED BY: SZ

SHEET TITLE

TERMINAL AREA DRAWING - WEST

AUG 06, 2024 5:05 PM ALEXA02176
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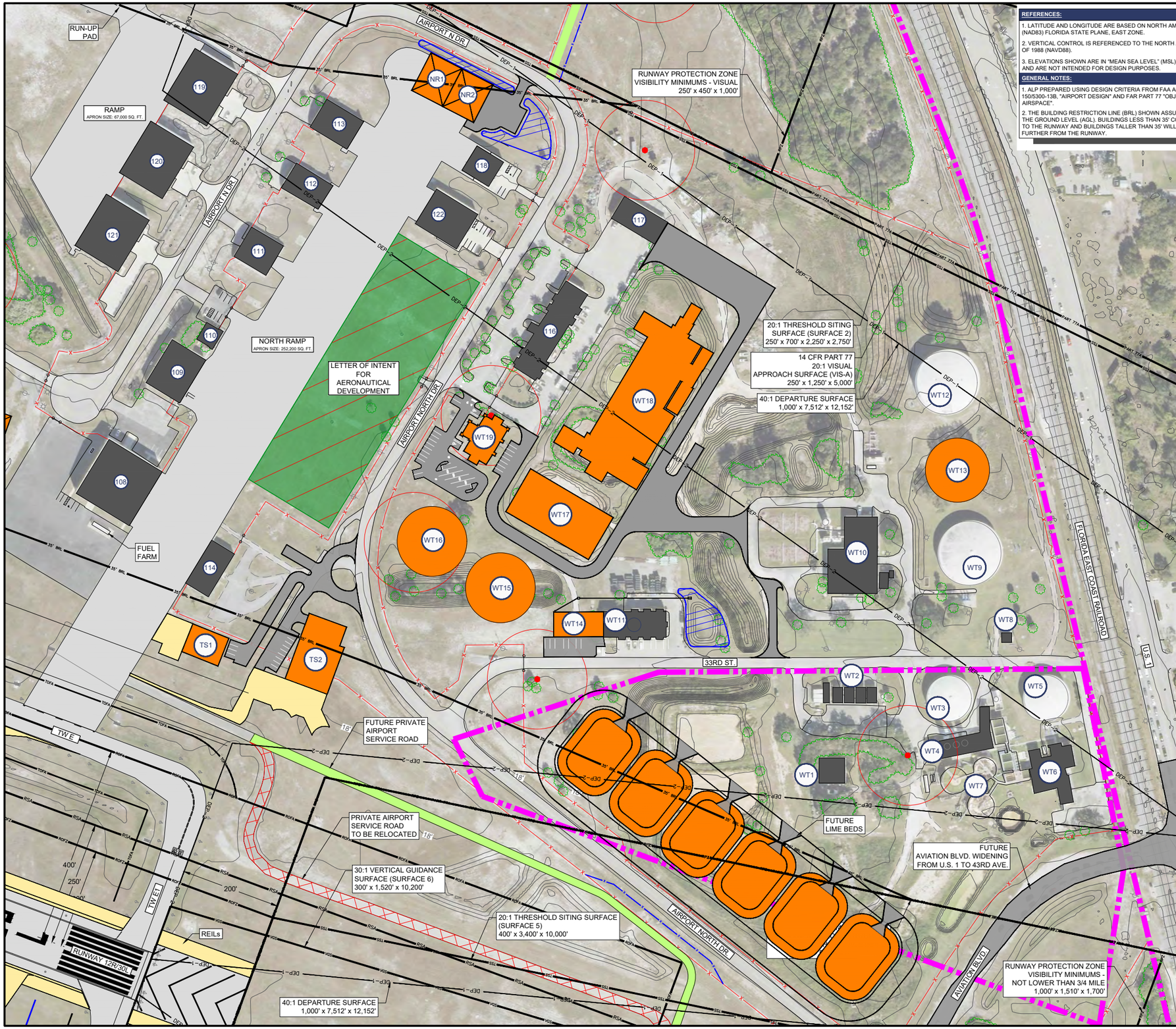

REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. THE BUILDING RESTRICTION LINE (BRL) SHOWN ASSUMES A HEIGHT OF 35' ABOVE THE GROUND LEVEL (AGL). BUILDINGS LESS THAN 35' COULD BE POSITIONED CLOSER TO THE RUNWAY AND BUILDINGS TALLER THAN 35' WILL BE REQUIRED TO BE FURTHER FROM THE RUNWAY.

MAGNETIC DECLINATION (FEBRUARY 2024)
7.28° W ±0.34°, CHANGING 0.08° W PER YEAR

N

0' 50' 100' 200'

HALF SIZE SCALE: 1"= 200'
FULL SIZE SCALE: 1"= 100'

FACILITIES DATA TABLE - EXISTING

FACILITY ID NUMBER	DESCRIPTION	FACILITY ELEVATION (MSL)
108	DAVIS DEVELOPMENT	61.47'
109	CORPORATE AIR	43.34'
110	CORPORATE AIR	34.17'
111	TOM SOODSMA	40.16'
112	HANGAR 5 VENTURES	43.42'
113	MIBEC AIR	42.68'
114	HARBOR HANGAR 700 LLC	38.61'
115	CITY WATER/SEWER TREATMENT PLANT	44.53'
116	CITY WATER/SEWER TREATMENT PLANT	46.34'
117	CITY WATER/SEWER TREATMENT PLANT	42.64'
118	TOM HOLDER	43.53'
119	JP AVIATION INVESTMENTS	53.92'
120	JP AVIATION INVESTMENTS	54.63'
121	JP AVIATION INVESTMENTS	55.22'
122	THOMAS WEBER	45.01'
WT1	WATER TREATMENT PLANT	28.16'
WT2	WATER TREATMENT PLANT	30.05'
WT3	WATER TREATMENT PLANT	44.53'
WT4	WATER TREATMENT PLANT	67.20'
WT5	WATER TREATMENT PLANT	47.23'
WT6	WATER TREATMENT PLANT	42.44'
WT7	WATER TREATMENT PLANT	38.74'
WT8	WATER TREATMENT PLANT	27.58'
WT9	WATER TREATMENT PLANT	48.34'
WT10	WATER TREATMENT PLANT	40.53'
WT11	WATER TREATMENT PLANT	44.53'
WT12	WATER TREATMENT PLANT	57.51'

FACILITIES DATA TABLE - FUTURE

NR1	85' x 70' BOX HANGAR	TBD
NR2	85' x 70' BOX HANGAR	TBD
TS1	TURBINE SOLUTIONS	TBD
TS2	TURBINE SOLUTIONS	TBD.
WT13	WATER TREATMENT PLANT	TBD
WT14	WATER TREATMENT PLANT	TBD
WT15	WATER TREATMENT PLANT	EST. 53'
WT16	WATER TREATMENT PLANT	EST. 55'
WT17	WATER TREATMENT PLANT	TBD
WT18	WATER TREATMENT PLANT	TBD
WT19	WATER TREATMENT PLANT	TBD

EXISTING	FUTURE	LEGEND
107	SAME	BUILDING ID NUMBER
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
X	X	AIRPORT FENCE (10 FT)
	SAME	CITY WELL (200 FT DIAMETER PROTECTION AREA)
		AVIGATION EASEMENT
		ROADWAY AND PARKING AREA
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
	SAME	PRECISION APPROACH PATH INDICATOR (PAPI)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
ROFA	ROFA	RUNWAY OBJECT FREE AREA (ROFA)
ROFZ	ROFZ	RUNWAY OBJECT FREE ZONE (ROFZ)
TSA	TSA	TAXIWAY SAFETY AREA (TSA)
TOFA	TOFA	TAXIWAY OBJECT FREE AREA (TOFA)
BRL	SAME	BUILDING RESTRICTION LINE (BRL)
PART 77A	PART 77A	FAR PART 77 APPROACH SURFACE (PART 77A)
DEP-1	DEP-1	DEPARTURE SURFACE - SECTION 1 (DEP-1)
DEP-2	DEP-2	DEPARTURE SURFACE - SECTION 2 (DEP-2)
TSS	TSS	THRESHOLD SITTING SURFACE (TSS)
VGS	VGS	VERTICAL GUIDANCE SURFACE (VGS)
N/A		LOI FOR AERONAUTICAL DEVELOPMENT

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PHONE (772) 978-4930

VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	13_TAD_NORTH.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

TERMINAL AREA DRAWING - NORTH

AUG 06, 2024 5:06 PM ALEXA02176
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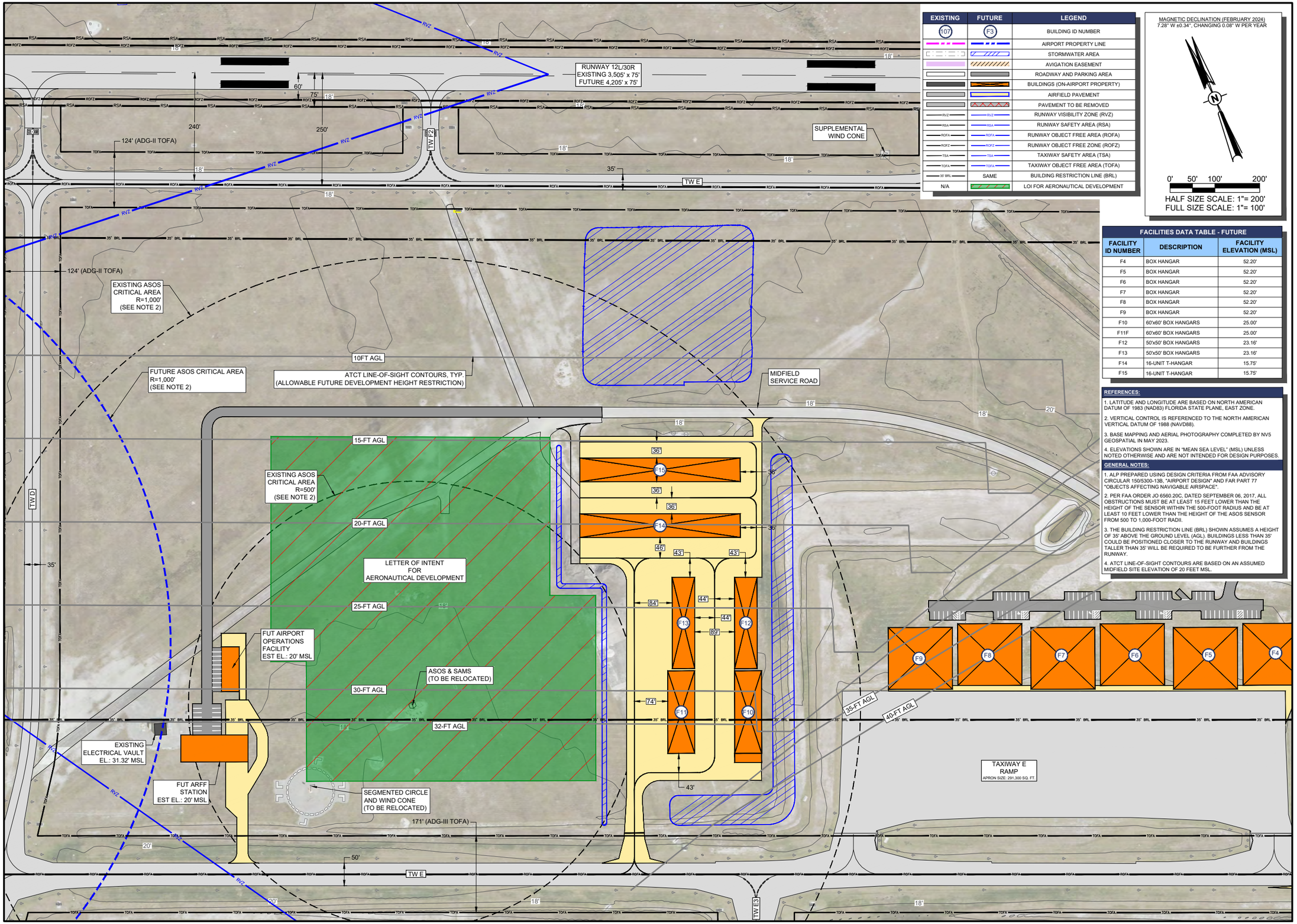

EXISTING	FUTURE	LEGEND
107	F3	BUILDING ID NUMBER
		AIRPORT PROPERTY LINE
		STORMWATER AREA
		AVIGATION EASEMENT
		ROADWAY AND PARKING AREA
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
RVZ	RVZ	RUNWAY VISIBILITY ZONE (RVZ)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
ROFA	ROFA	RUNWAY OBJECT FREE AREA (ROFA)
ROFZ	ROFZ	RUNWAY OBJECT FREE ZONE (ROFZ)
TSA	TSA	TAXIWAY SAFETY AREA (TSA)
TOFA	TOFA	TAXIWAY OBJECT FREE AREA (TOFA)
35' BRL	SAME	BUILDING RESTRICTION LINE (BRL)
N/A		LOI FOR AERONAUTICAL DEVELOPMENT

MAGNETIC DECLINATION (FEBRUARY 2024)
7.28° W ±0.34', CHANGING 0.08' W PER YEAR

0' 50' 100' 200'
HALF SIZE SCALE: 1"= 200'
FULL SIZE SCALE: 1"= 100'

FACILITIES DATA TABLE - FUTURE

FACILITY ID NUMBER	DESCRIPTION	FACILITY ELEVATION (MSL)
F4	BOX HANGAR	52.20'
F5	BOX HANGAR	52.20'
F6	BOX HANGAR	52.20'
F7	BOX HANGAR	52.20'
F8	BOX HANGAR	52.20'
F9	BOX HANGAR	52.20'
F10	60'x60' BOX HANGARS	25.00'
F11F	60'x60' BOX HANGARS	25.00'
F12	50'x50' BOX HANGARS	23.16'
F13	50'x50' BOX HANGARS	23.16'
F14	16-UNIT T-HANGAR	15.75'
F15	16-UNIT T-HANGAR	15.75'

REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.

2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

3. BASE MAPPING AND AERIAL PHOTOGRAPHY COMPLETED BY NV5 GEOSPATIAL IN MAY 2023.

4. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".

2. PER FAA ORDER JO 6560.20C, DATED SEPTEMBER 06, 2017, ALL OBSTRUCTIONS MUST BE AT LEAST 15 FEET LOWER THAN THE HEIGHT OF THE SENSOR WITHIN THE 500-FOOT RADIUS AND BE AT LEAST 10 FEET LOWER THAN THE HEIGHT OF THE ASOS SENSOR FROM 500 TO 1,000-FOOT RADII.

3. THE BUILDING RESTRICTION LINE (BRL) SHOWN ASSUMES A HEIGHT OF 35' ABOVE THE GROUND LEVEL (AGL). BUILDINGS LESS THAN 35' COULD BE POSITIONED CLOSER TO THE RUNWAY AND BUILDINGS TALLER THAN 35' WILL BE REQUIRED TO BE FURTHER FROM THE RUNWAY.

4. ATCT LINE-OF-SIGHT CONTOURS ARE BASED ON AN ASSUMED MIDFIELD SITE ELEVATION OF 20 FEET MSL.

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VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE: 14_TAD_MIDFIELD.DWG	
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

TERMINAL AREA DRAWING - MIDFIELD

AUG 06, 2024 5:07 PM ALEXA02176
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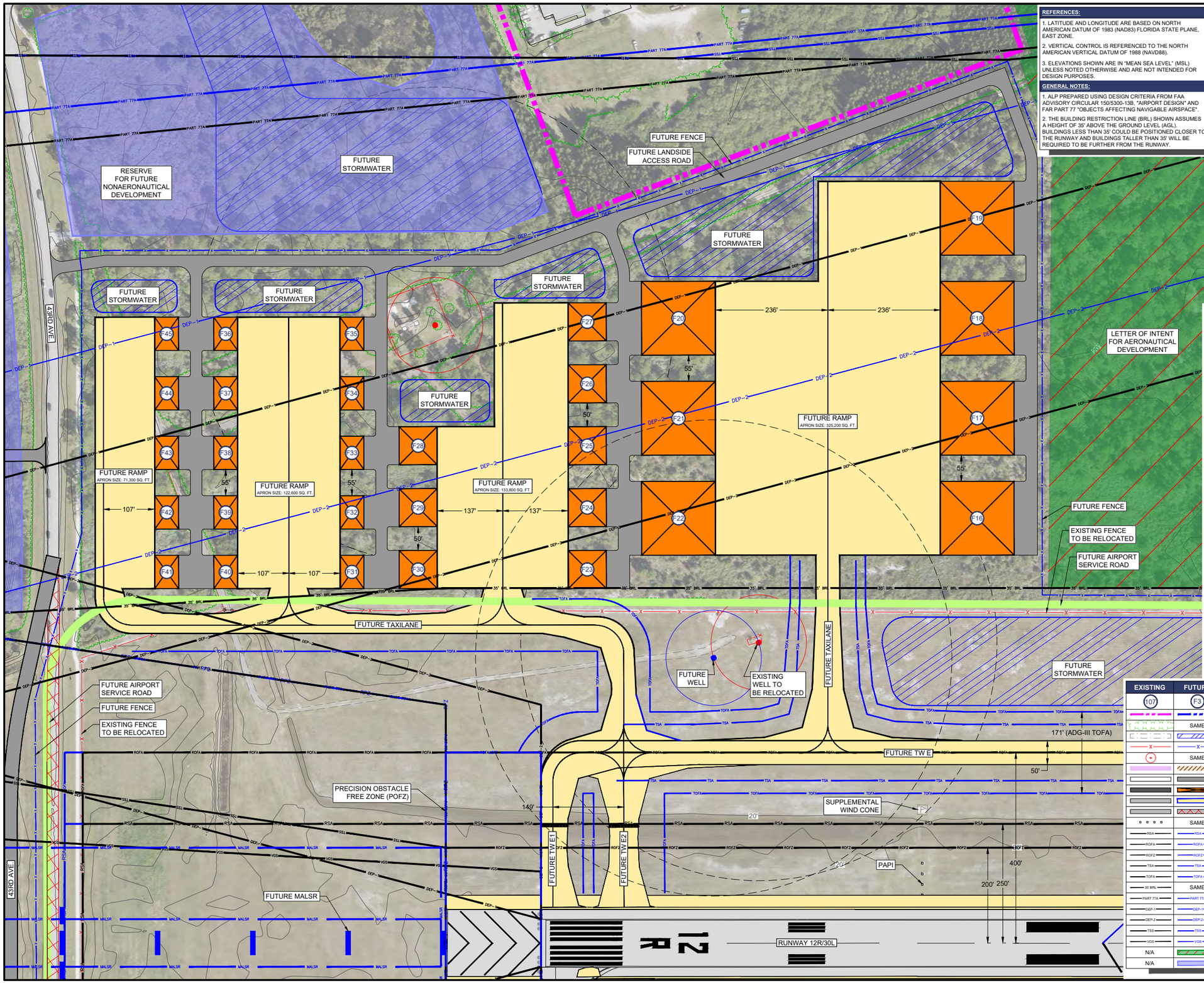

REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. THE BUILDING RESTRICTION LINE (BRL) SHOWN ASSUMES A HEIGHT OF 35' ABOVE THE GROUND LEVEL (AGL). BUILDINGS LESS THAN 35' COULD BE POSITIONED CLOSER TO THE RUNWAY AND BUILDINGS TALLER THAN 35' WILL BE REQUIRED TO BE FURTHER FROM THE RUNWAY.

MAGNETIC DECLINATION (FEBRUARY 2024)
7.28° W ±0.34°, CHANGING 0.08° W PER YEAR

0' 50' 100' 200'
HALF SIZE SCALE: 1"= 200'
FULL SIZE SCALE: 1"= 100'

FACILITIES DATA TABLE - FUTURE

FACILITY ID NUMBER	DESCRIPTION	FACILITY ELEVATION (MSL)
F16	155' x 155' BOX HANGAR	EST. 52'
F17	155' x 155' BOX HANGAR	EST. 52'
F18	155' x 155' BOX HANGAR	EST. 52'
F19	155' x 155' BOX HANGAR	EST. 52'
F20	155' x 155' BOX HANGAR	EST. 52'
F21	155' x 155' BOX HANGAR	EST. 52'
F22	155' x 155' BOX HANGAR	EST. 52'
F23	80' x 80' BOX HANGAR	EST. 52'
F24	80' x 80' BOX HANGAR	EST. 52'
F25	80' x 80' BOX HANGAR	EST. 52'
F26	80' x 80' BOX HANGAR	EST. 52'
F27	80' x 80' BOX HANGAR	EST. 52'
F28	80' x 80' BOX HANGAR	EST. 52'
F29	80' x 80' BOX HANGAR	EST. 52'
F30	80' x 80' BOX HANGAR	EST. 52'
F31	70' x 50' BOX HANGAR	EST. 52'
F32	70' x 50' BOX HANGAR	EST. 52'
F33	70' x 50' BOX HANGAR	EST. 52'
F34	70' x 50' BOX HANGAR	EST. 52'
F35	70' x 50' BOX HANGAR	EST. 52'
F36	70' x 50' BOX HANGAR	EST. 52'
F37	70' x 50' BOX HANGAR	EST. 52'
F38	70' x 50' BOX HANGAR	EST. 52'
F39	70' x 50' BOX HANGAR	EST. 52'
F40	70' x 50' BOX HANGAR	EST. 52'
F41	70' x 50' BOX HANGAR	EST. 52'
F42	70' x 50' BOX HANGAR	EST. 52'
F43	70' x 50' BOX HANGAR	EST. 52'
F44	70' x 50' BOX HANGAR	EST. 52'
F45	70' x 50' BOX HANGAR	EST. 52'

* FUTURE DEVELOPMENT SITE ELEVATION IS ASSUMED AT 22 FEET MSL. EACH FUTURE BOX HANGAR HEIGHT IS ASSUMED AT 30 FEET AGL.

EXISTING	FUTURE	LEGEND
107	F3	BUILDING ID NUMBER
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
		STORMWATER AREA
		AIRPORT FENCE (10 FT)
	SAME	CITY WELL (200 FT DIAMETER PROTECTION AREA)
		AVIGATION EASEMENT
		ROADWAY AND PARKING AREA
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
	SAME	PRECISION APPROACH PATH INDICATOR (PAPI)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
ROFA	ROFA	RUNWAY OBJECT FREE AREA (ROFA)
ROFZ	ROFZ	RUNWAY OBJECT FREE ZONE (ROFZ)
TSA	TSA	TAXIWAY SAFETY AREA (TSA)
TOFA	TOFA	TAXIWAY OBJECT FREE AREA (TOFA)
35' BRL	SAME	BUILDING RESTRICTION LINE (BRL)
PART 77A	PART 77A	FAR PART 77 APPROACH SURFACE (PART 77A)
DEP-1	DEP-1	DEPARTURE SURFACE - SECTION 1 (DEP-1)
DEP-2	DEP-2	DEPARTURE SURFACE - SECTION 2 (DEP-2)
TSS	TSS	THRESHOLD SITTING SURFACE (TSS)
VGS	VGS	VERTICAL GUIDANCE SURFACE (VGS)
N/A		LOI FOR AERONAUTICAL DEVELOPMENT
N/A		RESERVE FOR NONAERONAUTICAL DEVELOPMENT

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VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	15_TAD_NORTHWEST.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

TERMINAL AREA DRAWING - NORTHWEST

AUG 06, 2024 5:08 PM ALEXA02176
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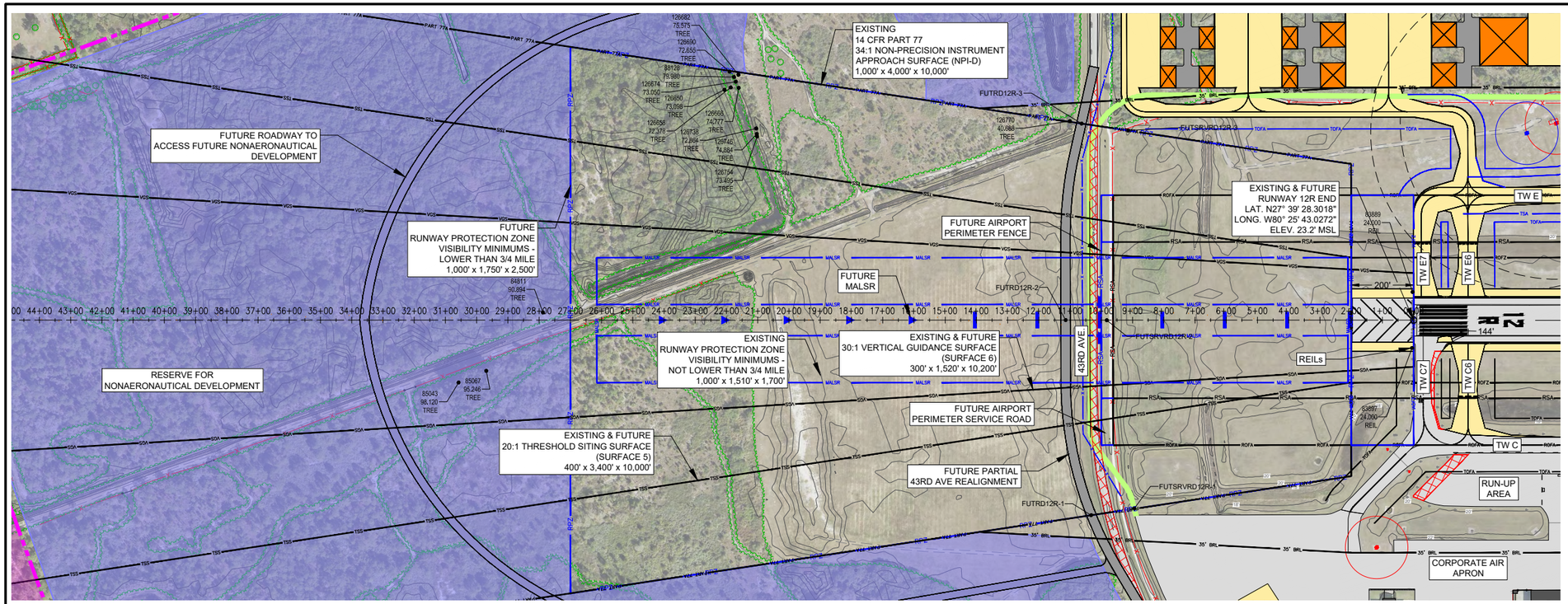
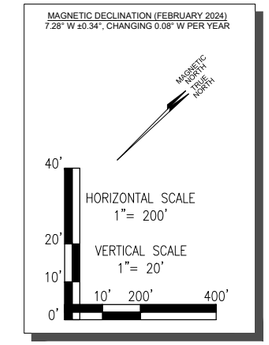




NOTE: OBSTRUCTIONS SHOWN IN PLAN AND PROFILE VIEWS ARE APPROACH SURFACE PENETRATIONS OR OBJECTS WITHIN 15 FEET OF 14 CFR PART 77 APPROACH SURFACES.

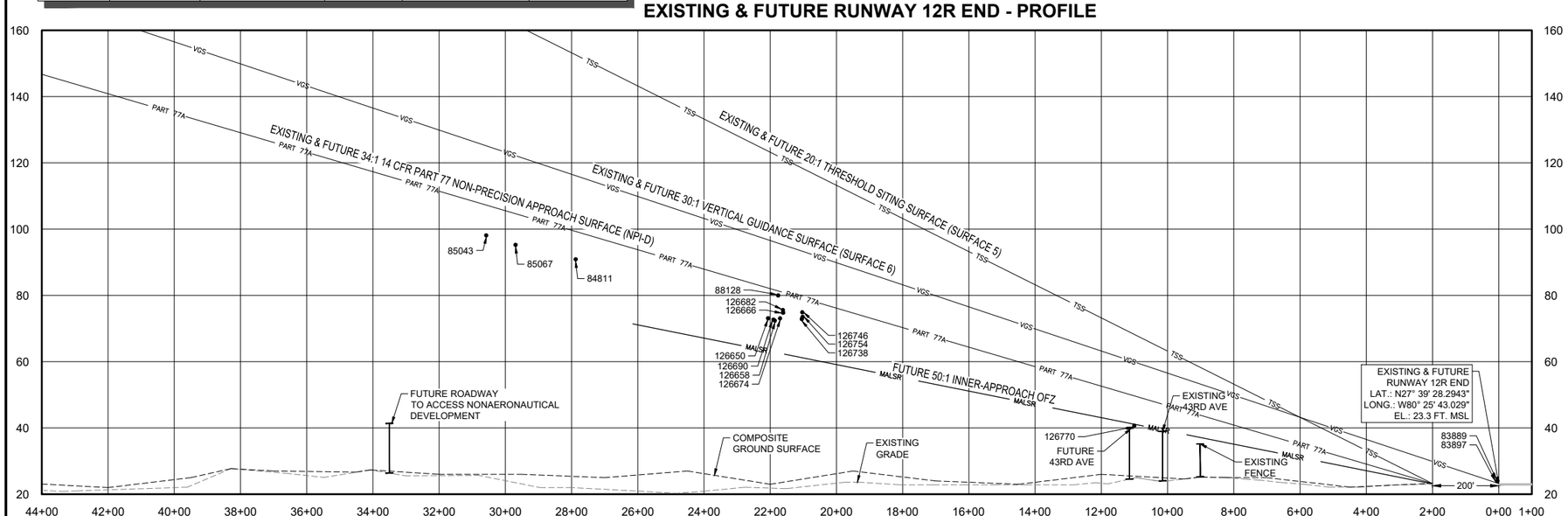
- ● OBJECTS WITHIN 15 FEET OF 14 CFR PART 77 APPROACH SURFACE
- ● APPROACH SURFACE PENETRATIONS

EXISTING & FUTURE RUNWAY 12R END - PLAN

14 CFR PART 77 TRAVERSE WAYS

OBJECT	DESCRIPTION	DISTANCE FROM SURFACE INNER WIDTH	OBJECT ELEVATION	CFR PART 77 APPROACH SURFACE ELEVATION	CLEARANCE (-) PENETRATION (+)
107321	EXIST. PUBLIC ROAD	826'	24' + 15' = 39'	47'	-8'
107353	EXIST. PUBLIC ROAD	826'	24' + 15' = 39'	47'	-8'
107393	EXIST. PUBLIC ROAD	826'	24' + 15' = 39'	46'	-7'
FUTRD12R-1	FUT. PUBLIC ROAD	833'	22' + 15' = 37'	48'	-11'
FUTRD12R-2	FUT. PUBLIC ROAD	914'	25' + 15' = 40'	50'	-10'
FUTRD12R-3	FUT. PUBLIC ROAD	864'	22' + 15' = 37'	49'	-12'
FUTSRVRD12R-1	FUT. PRIVATE ROAD	694'	27' + 10' = 37'	44'	-7'
FUTSRVRD12R-2	FUT. PRIVATE ROAD	781'	23' + 10' = 33'	46'	-13'
FUTSRVRD12R-3	FUT. PRIVATE ROAD	715'	23' + 10' = 33'	44'	-11'

EXISTING & FUTURE RUNWAY 12R END - PROFILE



REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. THERE ARE NO OBJECTS PENETRATIONS TO THE EXISTING 20:1 THRESHOLD SITING SURFACE.
3. THERE ARE NO OFZ PENETRATIONS OTHER THAN FRANGIBLE NAVAIDS.
4. GROUND CONTOUR INTERVALS ARE 2-FOOT ON AIRPORT GENERATED FROM NV5 GEOSPATIAL DIGITAL TERRAIN MODEL (DTM). OFF AIRPORT 5-FOOT CONTOURS FROM NV5 GEOSPATIAL AND STATE LIDAR DATA.

OBSTRUCTION NOTES:

1. OBSTRUCTION SURVEY INFORMATION COLLECTED BY NV5 GEOSPATIAL IN MAY 2023.
2. PER FAR PART 77, "OBJECTS AFFECTING NAVIGABLE AIRSPACE", RAILWAYS CONSIDERED AS 23' OBJECTS, INTERSTATE HIGHWAYS AS 17', PUBLIC ROADS AS 15', PRIVATE ROADS AS 10', OR THE HIGHEST OBJECT USING THE ROAD.
3. OBJECTS THAT PENETRATE OR WITHIN 15 FEET OF RUNWAY APPROACH SURFACES ARE SHOWN.
4. TREES SHOWN AS OBJECTS MAY REPRESENT MULTIPLE TREES.
5. SEE OBSTRUCTION DATA TABLE SHEET 22.

EXISTING	FUTURE	LEGEND
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
		AIRPORT EASEMENT
		ROADS
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
	SAME	RUNWAY END IDENTIFIER LIGHTS (REIL)
RPZ	RPZ	RUNWAY PROTECTION ZONE (RPZ)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
ROFA	ROFA	RUNWAY OBJECT FREE AREA (ROFA)
ROFZ	ROFZ	RUNWAY OBJECT FREE ZONE (ROFZ)
PART 77A	PART 77A	FAR PART 77 APPROACH SURFACE (PART 77A)
TSS	TSS	THRESHOLD SITTING SURFACE (TSS)
VGS	VGS	VERTICAL GUIDANCE SURFACE (VGS)

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PHONE (772) 978-4930

VERO BEACH
REGIONAL AIRPORT
(VRB)

AIRPORT LAYOUT PLAN
DRAWINGS SET

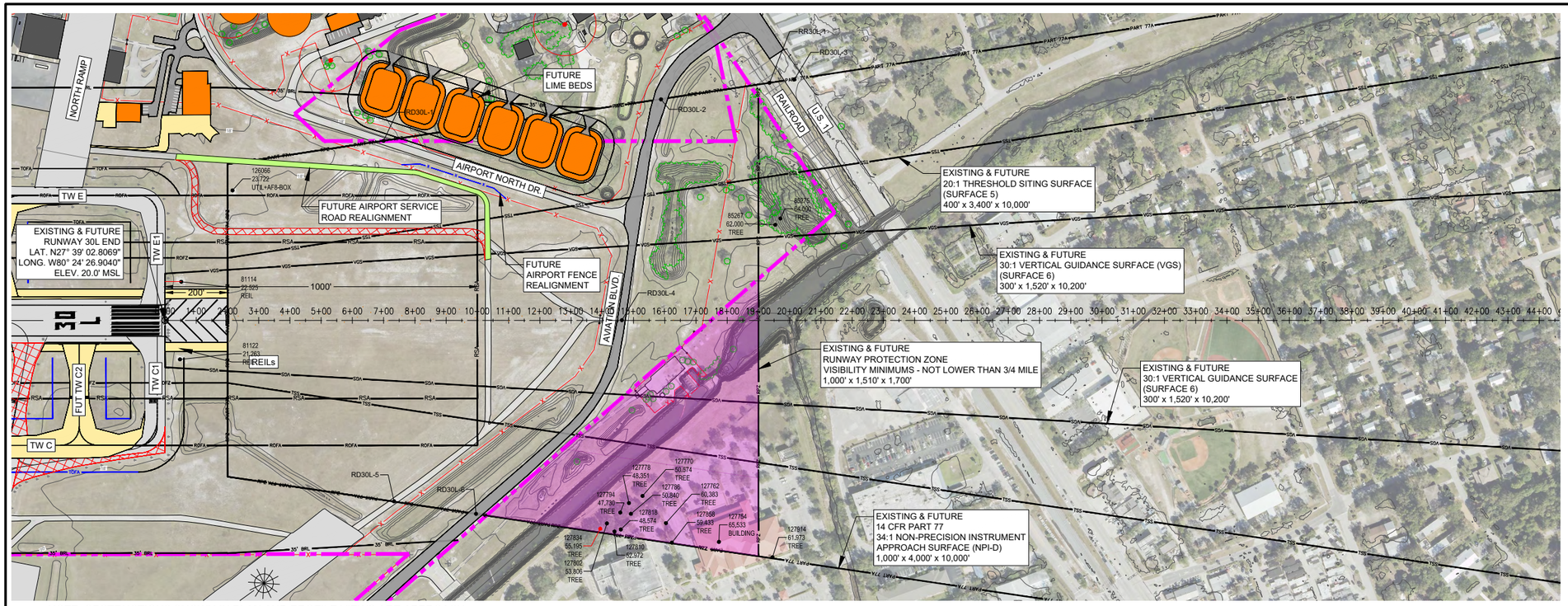
DATE	REVISION DESCRIPTION	BY

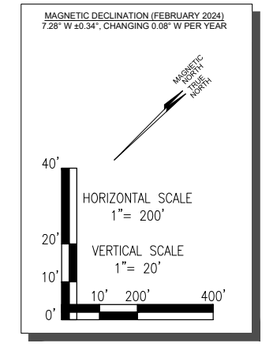
ISSUE: AUGUST 2024
PROJECT NO: 20A0069W01
CAD FILE: 16_IPASD_RW 12R_E&F.DWG
DESIGN BY: JA
DRAWN BY: JA
REVIEWED BY: SZ

SHEET TITLE

INNER PORTION OF
THE APPROACH
SURFACE DRAWING -
RUNWAY 12R

AUG 06, 2024 5:09 PM ALEXA02176
I:\20JOBS\20A0069W01\CAD\AIRPORT\SHEET\ALP\16_IPASD_RW 12R_E&F.DWG



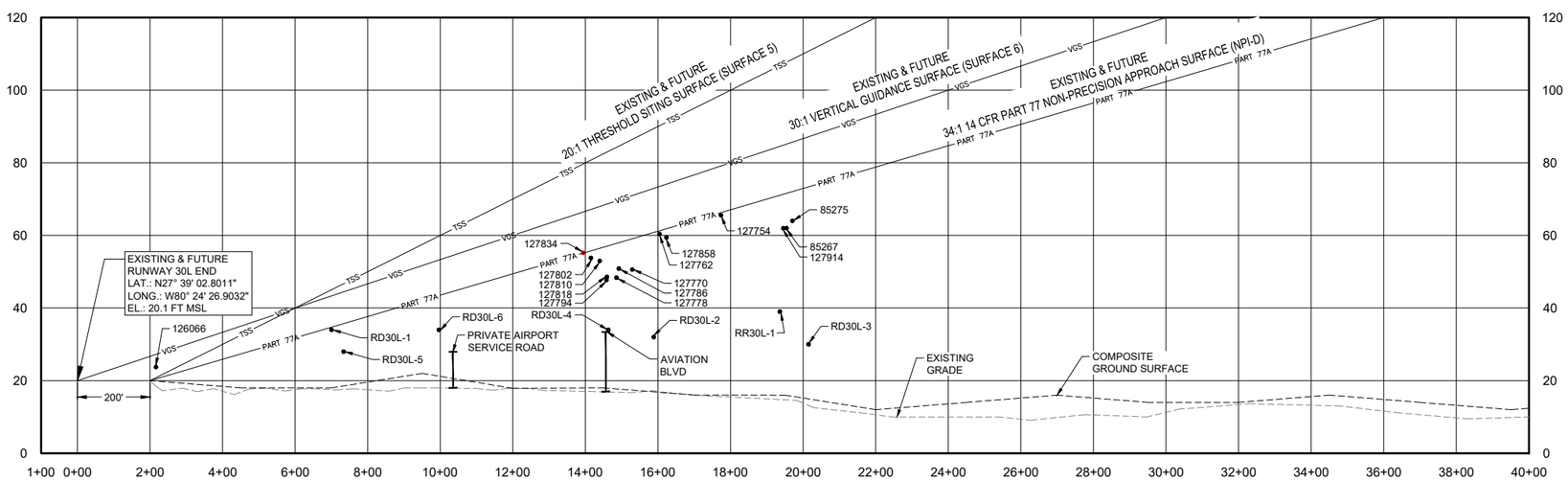


NOTE: OBSTRUCTIONS SHOWN IN PLAN AND PROFILE VIEWS ARE APPROACH SURFACE PENETRATIONS OR OBJECTS WITHIN 15 FEET OF 14 CFR PART 77 APPROACH SURFACES.

- OBJECTS WITHIN 15 FEET OF 14 CFR PART 77 APPROACH SURFACE
- APPROACH SURFACE PENETRATIONS

EXISTING & FUTURE RUNWAY 30L END - PLAN

EXISTING & FUTURE RUNWAY 30L END - PROFILE



REFERENCES:

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GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
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3. THERE ARE NO OFZ PENETRATIONS OTHER THAN FRANGIBLE NAVAIDS.
4. GROUND CONTOUR INTERVALS ARE 2-FOOT ON AIRPORT GENERATED FROM NV5 GEOSPATIAL DIGITAL TERRAIN MODEL (DTM). OFF AIRPORT 5-FOOT CONTOURS FROM NV5 GEOSPATIAL AND STATE LIDAR DATA.

OBSTRUCTION NOTES:

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2. PER FAR PART 77, "OBJECTS AFFECTING NAVIGABLE AIRSPACE", RAILWAYS CONSIDERED AS 23' OBJECTS, INTERSTATE HIGHWAYS AS 17', PUBLIC ROADS AS 15', PRIVATE ROADS AS 10', OR THE HIGHEST OBJECT USING THE ROAD.
3. OBJECTS THAT PENETRATE OR WITHIN 15 FEET OF RUNWAY APPROACH SURFACES ARE SHOWN.
4. TREES SHOWN AS OBJECTS MAY REPRESENT MULTIPLE TREES.
5. SEE OBSTRUCTION DATA TABLE SHEET 22.

EXISTING	FUTURE	LEGEND
	SAME	AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
		AIRPORT EASEMENT
		ROADS
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
	SAME	RUNWAY END IDENTIFIER LIGHTS (REIL)
RPZ	RPZ	RUNWAY PROTECTION ZONE (RPZ)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
ROFA	ROFA	RUNWAY OBJECT FREE AREA (ROFA)
ROFZ	ROFZ	RUNWAY OBJECT FREE ZONE (ROFZ)
PART 77A	PART 77A	FAR PART 77 APPROACH SURFACE (PART 77A)
TSS	TSS	THRESHOLD SITTING SURFACE (TSS)
VGS	VGS	VERTICAL GUIDANCE SURFACE (VGS)

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AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	17_IPASD_RW 30L_E&F.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 30L

AUG 06, 2024 5:11 PM ALEXA02176
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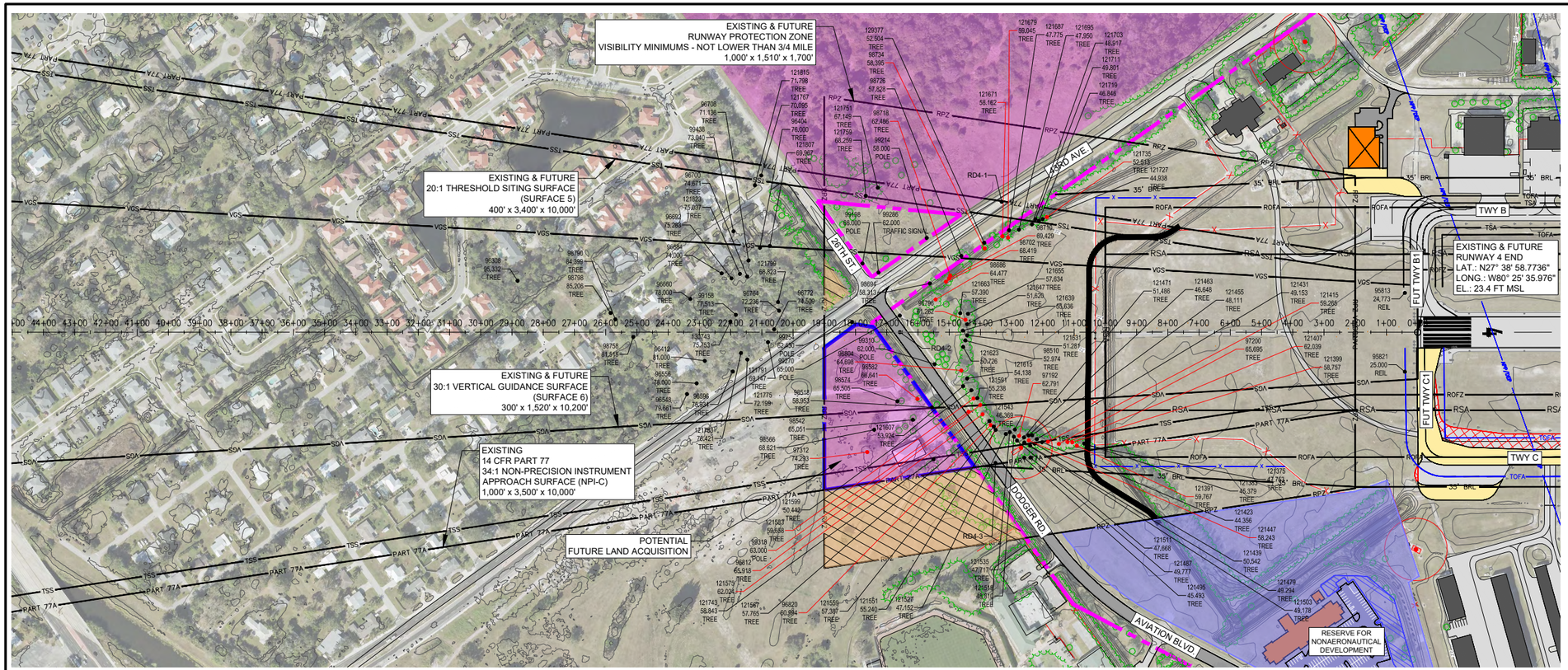
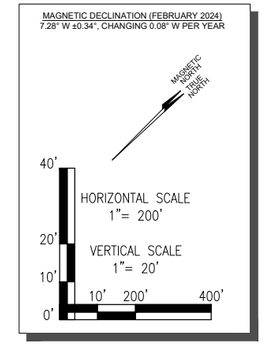


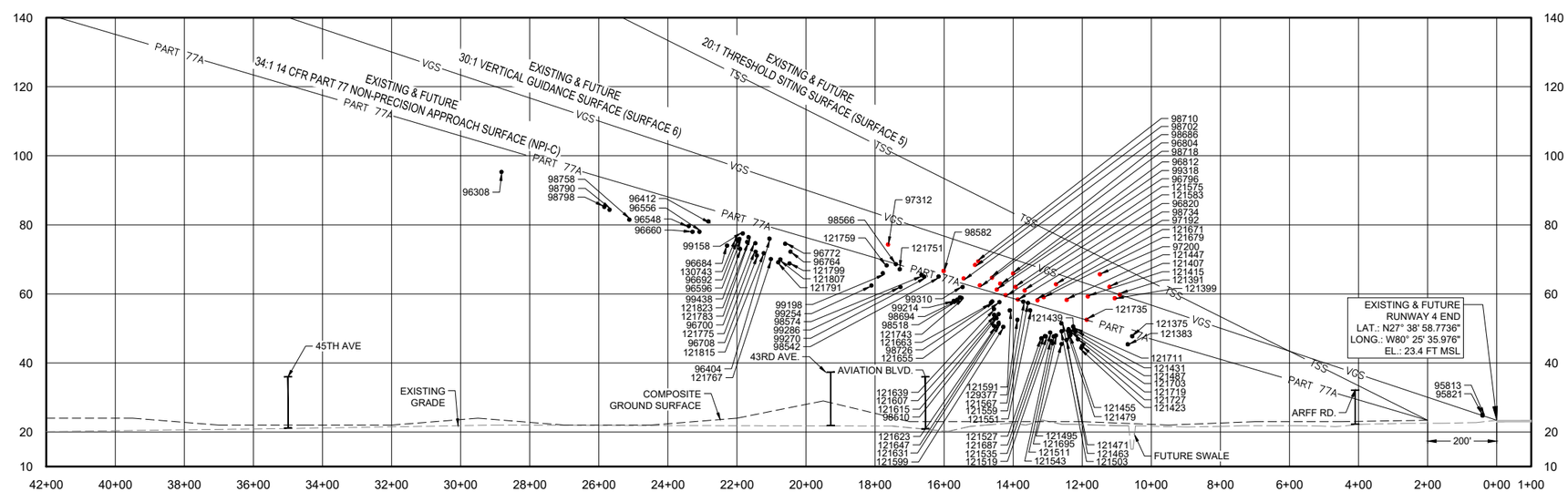


NOTE: OBSTRUCTIONS SHOWN IN PLAN AND PROFILE VIEWS ARE APPROACH SURFACE PENETRATIONS OR OBJECTS WITHIN 15 FEET OF 14 CFR PART 77 APPROACH SURFACES.

- OBJECTS WITHIN 15 FEET OF 14 CFR PART 77 APPROACH SURFACE
- APPROACH SURFACE PENETRATIONS

EXISTING & FUTURE RUNWAY 4 END - PLAN

EXISTING & FUTURE RUNWAY 4 END - PROFILE



REFERENCES:

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GENERAL NOTES:

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OBSTRUCTION NOTES:

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3. OBJECTS THAT PENETRATE OR WITHIN 15 FEET OF RUNWAY APPROACH SURFACES ARE SHOWN.
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5. SEE OBSTRUCTION DATA TABLE SHEET 23.

EXISTING	FUTURE	LEGEND
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
		AIRPORT EASEMENT
		ROADS
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
	SAME	RUNWAY END IDENTIFIER LIGHTS (REIL)
RPZ	RPZ	RUNWAY PROTECTION ZONE (RPZ)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
ROFA	ROFA	RUNWAY OBJECT FREE AREA (ROFA)
ROFZ	ROFZ	RUNWAY OBJECT FREE ZONE (ROFZ)
PART 77A	PART 77A	FAR PART 77 APPROACH SURFACE (PART 77A)
TSS	TSS	THRESHOLD SITTING SURFACE (TSS)
VGS	VGS	VERTICAL GUIDANCE SURFACE (VGS)

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(VRB)

AIRPORT LAYOUT PLAN
DRAWINGS SET

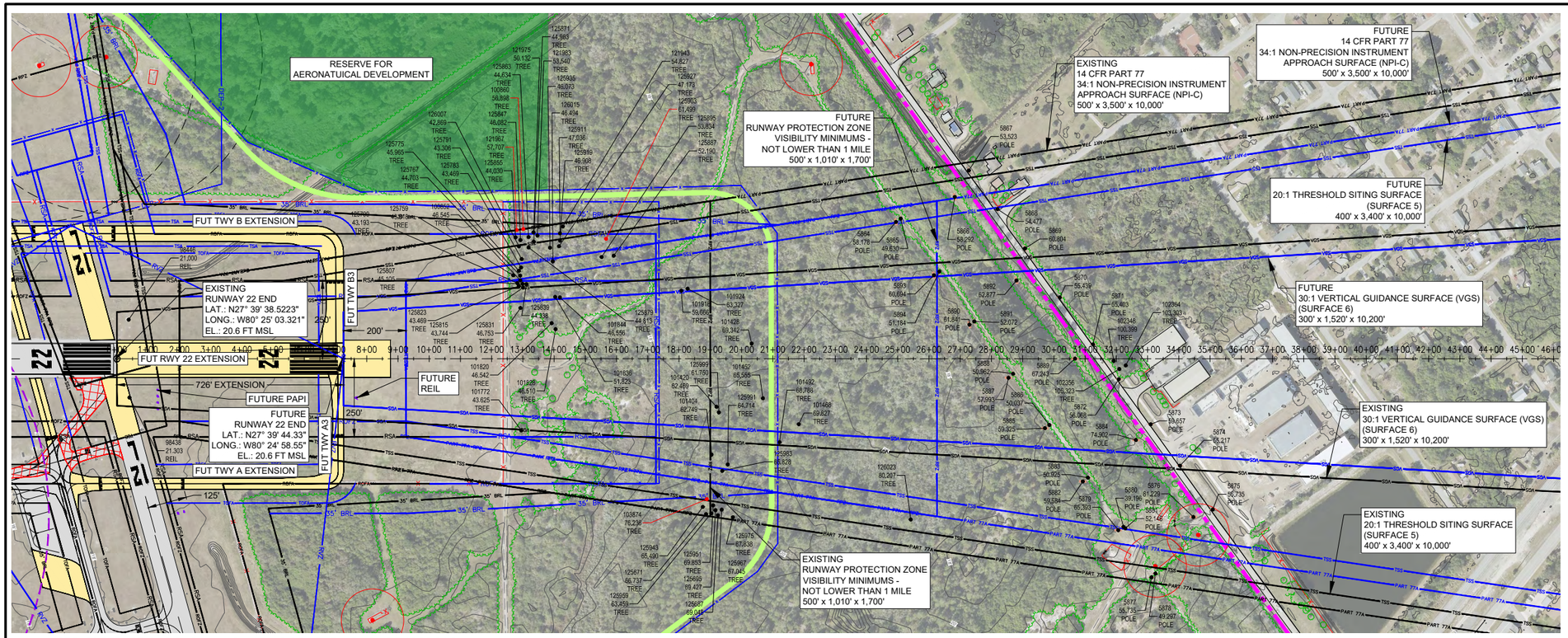
DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	18_IPASD_RW 4_E&F.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

INNER PORTION OF
THE APPROACH
SURFACE DRAWING -
RUNWAY 4

AUG 06, 2024 5:13 PM ALEXA02176
I:\20JOBS\20A0069W01\CAD\AIRPORT\SHEET\ALP\18_IPASD_RW 4_E&F.DWG



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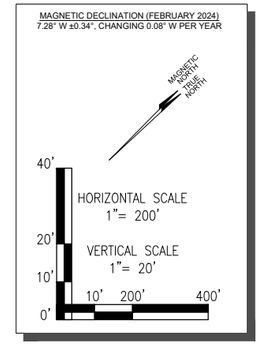
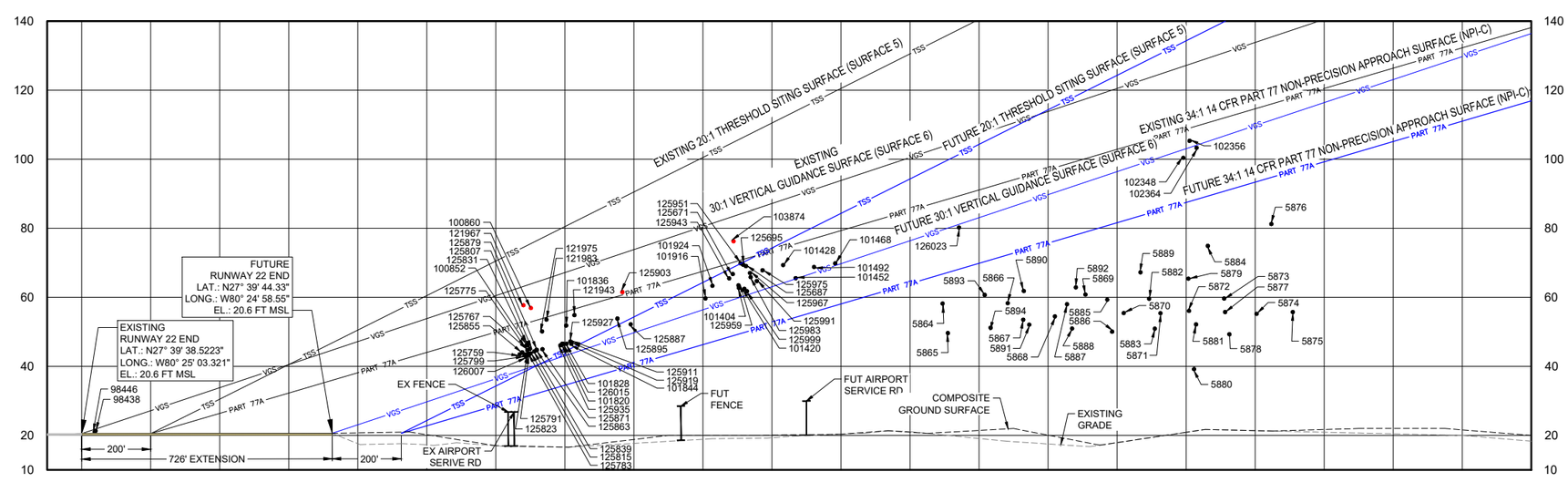
- ● OBJECTS WITHIN 15 FEET OF 14 CFR PART 77 APPROACH SURFACE
- ● APPROACH SURFACE PENETRATIONS

EXISTING & FUTURE RUNWAY 22 END - PLAN



EXISTING & FUTURE RUNWAY 22 END - PROFILE



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OBSTRUCTION NOTES:

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5. SEE OBSTRUCTION DATA TABLE SHEET 24.

EXISTING	FUTURE	LEGEND
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
	SAME	ROADS
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		RUNWAY END IDENTIFIER LIGHTS (REIL)
RPZ	RPZ	RUNWAY PROTECTION ZONE (RPZ)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
ROFA	ROFA	RUNWAY OBJECT FREE AREA (ROFA)
ROFZ	ROFZ	RUNWAY OBJECT FREE ZONE (ROFZ)
PART 77A	PART 77A	FAR PART 77 APPROACH SURFACE (PART 77A)
TSS	TSS	THRESHOLD SITTING SURFACE (TSS)
VGS	VGS	VERTICAL GUIDANCE SURFACE (VGS)

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VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	19_IPASD_RW 22_E&F.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 22

AUG 06, 2024 5:14 PM ALEXA02176
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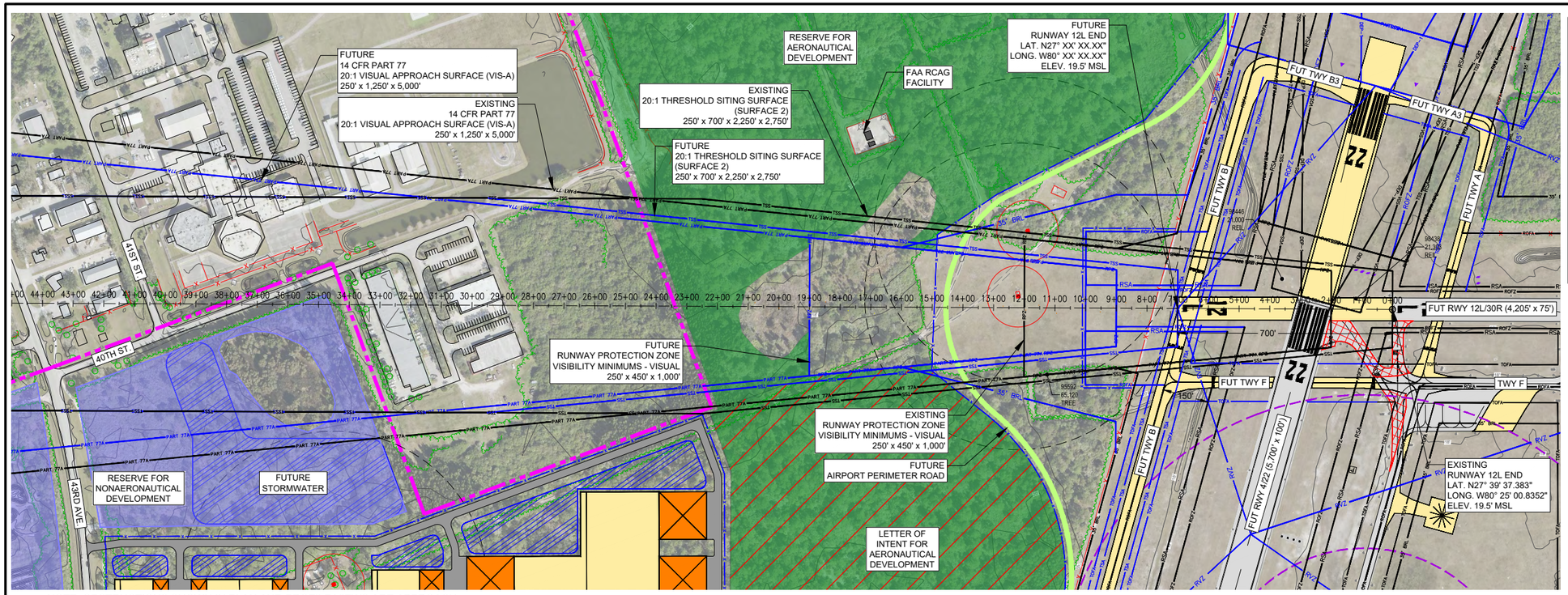

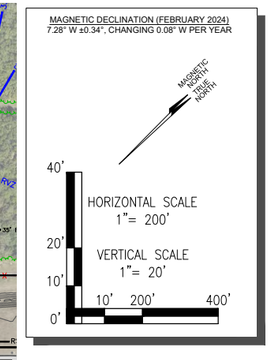

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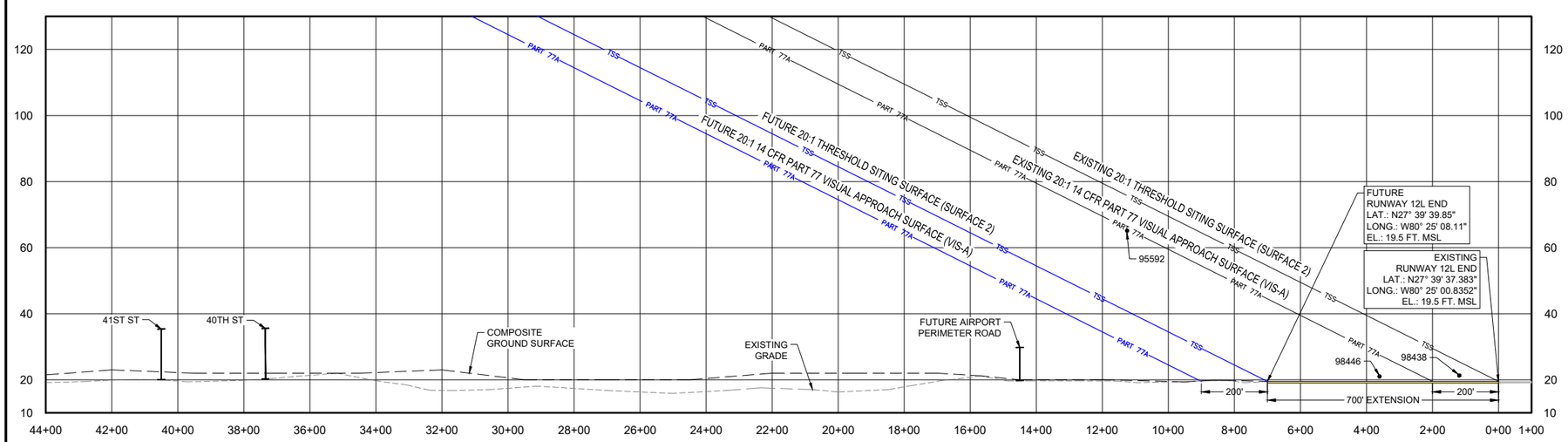
- OBJECTS WITHIN 15 FEET OF 14 CFR PART 77 APPROACH SURFACE
- APPROACH SURFACE PENETRATIONS

EXISTING & FUTURE RUNWAY 12L END - PLAN

EXISTING & FUTURE RUNWAY 12L END - PROFILE



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4. TREES SHOWN AS OBJECTS MAY REPRESENT MULTIPLE TREES.
5. SEE OBSTRUCTION DATA TABLE SHEET 22.

EXISTING	FUTURE	LEGEND
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
		ROADS
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
	SAME	RUNWAY END IDENTIFIER LIGHTS (REIL)
RPZ	RPZ	RUNWAY PROTECTION ZONE (RPZ)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
ROFA	ROFA	RUNWAY OBJECT FREE AREA (ROFA)
ROFZ	ROFZ	RUNWAY OBJECT FREE ZONE (ROFZ)
PART 77A	PART 77A	FAR PART 77 APPROACH SURFACE (PART 77A)
TSS	TSS	THRESHOLD SITTING SURFACE (TSS)
VGS	VGS	VERTICAL GUIDANCE SURFACE (VGS)

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AIRPORT LAYOUT PLAN
DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	20_IPASD_RW 12L_E&F.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

INNER PORTION OF
THE APPROACH
SURFACE DRAWING -
RUNWAY 12L

AUG 06, 2024 5:16 PM ALEXA02176
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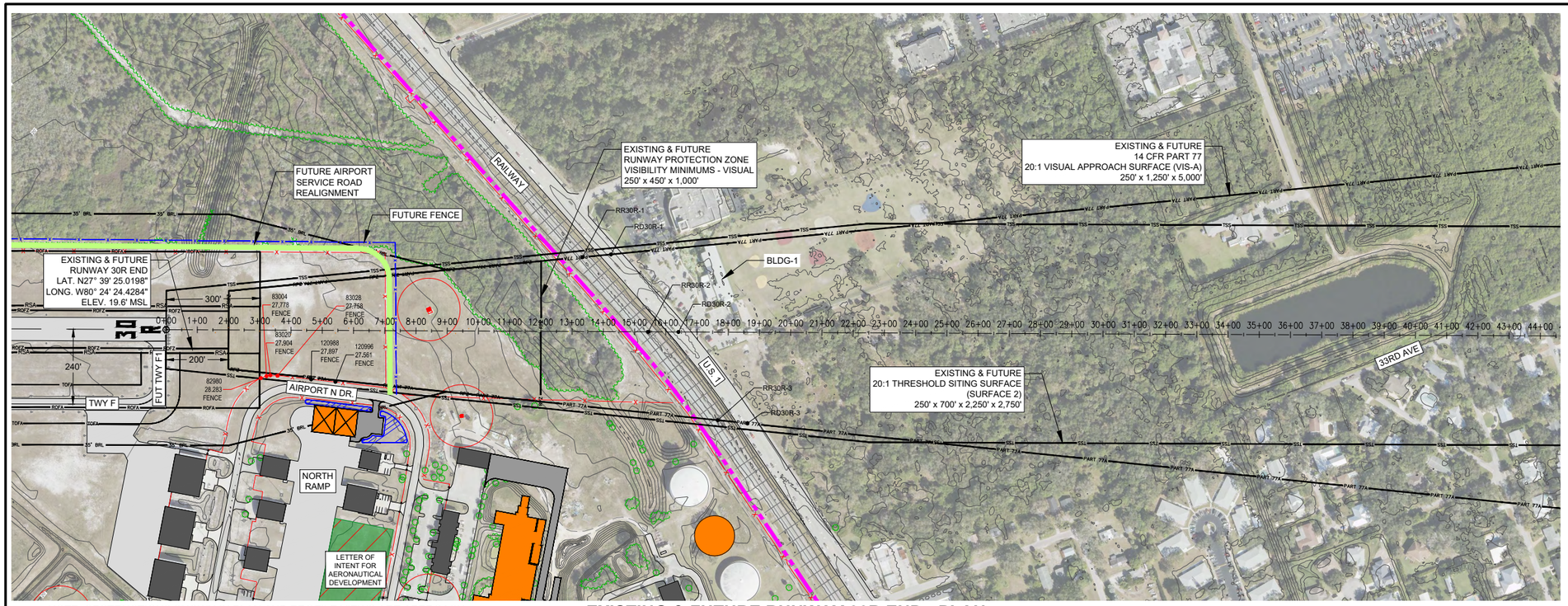
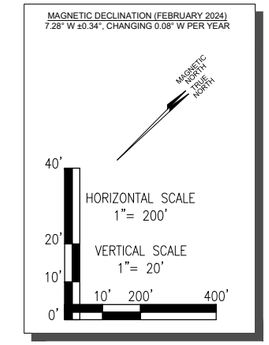


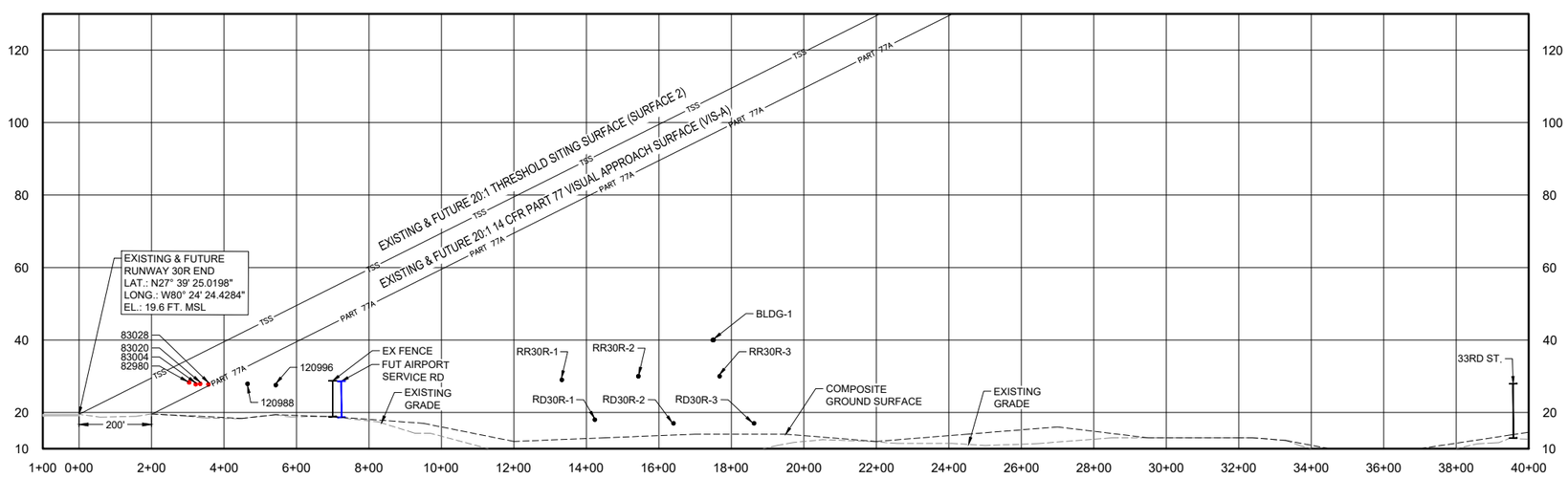
NOTE: OBSTRUCTIONS SHOWN IN PLAN AND PROFILE VIEWS ARE APPROACH SURFACE PENETRATIONS OR OBJECTS WITHIN 15 FEET OF 14 CFR PART 77 APPROACH SURFACES.

- OBJECTS WITHIN 15 FEET OF 14 CFR PART 77 APPROACH SURFACE
- APPROACH SURFACE PENETRATIONS

EXISTING & FUTURE RUNWAY 30R END - PLAN



EXISTING & FUTURE RUNWAY 30R END - PROFILE



REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. THERE ARE NO OBJECTS PENETRATIONS TO THE EXISTING 20:1 THRESHOLD SITING SURFACE.
3. THERE ARE NO OFZ PENETRATIONS OTHER THAN FRANGIBLE NAVAIDS.
4. GROUND CONTOUR INTERVALS ARE 2-FOOT ON AIRPORT GENERATED FROM NV5 GEOSPATIAL DIGITAL TERRAIN MODEL (DTM). OFF AIRPORT 5-FOOT CONTOURS FROM NV5 GEOSPATIAL AND STATE LIDAR DATA.

OBSTRUCTION NOTES:

1. OBSTRUCTION SURVEY INFORMATION COLLECTED BY NV5 GEOSPATIAL IN MAY 2023.
2. PER FAR PART 77, "OBJECTS AFFECTING NAVIGABLE AIRSPACE", RAILWAYS CONSIDERED AS 23' OBJECTS, INTERSTATE HIGHWAYS AS 17', PUBLIC ROADS AS 15', PRIVATE ROADS AS 10', OR THE HIGHEST OBJECT USING THE ROAD.
3. OBJECTS THAT PENETRATE OR WITHIN 15 FEET OF RUNWAY APPROACH SURFACES ARE SHOWN.
4. TREES SHOWN AS OBJECTS MAY REPRESENT MULTIPLE TREES.
5. SEE OBSTRUCTION DATA TABLE SHEET 22.

EXISTING	FUTURE	LEGEND
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
		ROADS
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
	SAME	RUNWAY END IDENTIFIER LIGHTS (REIL)
RPZ	RPZ	RUNWAY PROTECTION ZONE (RPZ)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
ROFA	ROFA	RUNWAY OBJECT FREE AREA (ROFA)
ROFZ	ROFZ	RUNWAY OBJECT FREE ZONE (ROFZ)
PART 77A	PART 77A	FAR PART 77 APPROACH SURFACE (PART 77A)
TSS	TSS	THRESHOLD SITTING SURFACE (TSS)
VGS	VGS	VERTICAL GUIDANCE SURFACE (VGS)

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AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	21_IPASD_RW 30R_E&F.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 30R

AUG 06, 2024 5:17 PM ALEXA002176
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RUNWAY 12R OBSTRUCTION DATA TABLE

OBJECT DATA			EXISTING AND FUTURE						PROPOSED DISPOSITION
			34:1 14 CFR PART 77 NON-PRECISION INSTRUMENT APPROACH SURFACE		20:1 THRESHOLD SITING SURFACE (SURFACE 5)		30:1 VERTICAL GUIDANCE SURFACE (SURFACE 6)		
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
83889	REIL	24	-	-	-	-	23	1	FIXED BY FUNCTION
83897	REIL	24	-	-	-	-	23	1	FIXED BY FUNCTION
84811	TREE	91	99	-8	153	-62	116	-25	TRIM/REMOVE
85043	TREE	98	107	-9	166	-68	125	-27	TRIM/REMOVE
85067	TREE	95	105	-9	162	-66	122	-27	TRIM/REMOVE
88128	TREE	80	81	-1	81	-1	81	-1	TRIM/REMOVE
107321	EX ROAD	39	47	-9	N/A	N/A	N/A	N/A	NO ACTION
107353	EX ROAD	39	47	-9	N/A	N/A	N/A	N/A	NO ACTION
107393	EX ROAD	39	46	-7	N/A	N/A	N/A	N/A	NO ACTION
126650	TREE	73	82	-9	82	-9	82	-9	TRIM/REMOVE
126658	TREE	72	82	-9	82	-9	82	-9	TRIM/REMOVE
126666	TREE	75	81	-6	81	-6	81	-6	TRIM/REMOVE
126674	TREE	73	81	-8	81	-8	81	-8	TRIM/REMOVE
126682	TREE	76	81	-5	81	-5	81	-5	TRIM/REMOVE
126690	TREE	73	82	-9	82	-9	82	-9	TRIM/REMOVE
126738	TREE	73	79	-6	79	-6	79	-6	TRIM/REMOVE
126746	TREE	75	79	-4	79	-4	79	-4	TRIM/REMOVE
126754	TREE	73	79	-6	79	-6	79	-6	TRIM/REMOVE
126770	TREE	41	50	-9	68	-28	60	-19	TRIM/REMOVE
FUTRD12R-1	FUT ROAD	37	48	-11	N/A	N/A	N/A	N/A	NO ACTION
FUTRD12R-2	FUT ROAD	40	50	-10	N/A	N/A	N/A	N/A	NO ACTION
FUTRD12R-3	FUT ROAD	37	49	-12	N/A	N/A	N/A	N/A	NO ACTION

RUNWAY 30L OBSTRUCTION DATA TABLE

OBJECT DATA			EXISTING AND FUTURE						PROPOSED DISPOSITION (PHASE)
			34:1 14 CFR PART 77 NON-PRECISION INSTRUMENT APPROACH SURFACE		20:1 THRESHOLD SITING SURFACE (SURFACE 5)		30:1 VERTICAL GUIDANCE SURFACE (SURFACE 6)		
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
81114	REIL	23	-	-	-	-	22	1	FIXED BY FUNCTION
81122	REIL	21	-	-	-	-	22	-1	FIXED BY FUNCTION
85267	TREE	62	72	-10	108	-46	N/A	N/A	TRIM/REMOVE
85275	TREE	64	72	-8	109	-45	N/A	N/A	TRIM/REMOVE
126066	UTILITY BOX	24	20	3	N/A	N/A	N/A	N/A	FIXED BY FUNCTION
127754	BUILDING	66	66	-1	N/A	N/A	N/A	N/A	NO ACTION
127762	TREE	60	61	-1	N/A	N/A	N/A	N/A	TRIM/REMOVE
127770	TREE	51	59	-9	N/A	N/A	N/A	N/A	TRIM/REMOVE
127778	TREE	48	58	-9	N/A	N/A	N/A	N/A	TRIM/REMOVE
127786	TREE	51	58	-7	N/A	N/A	N/A	N/A	TRIM/REMOVE
127794	TREE	48	57	-9	N/A	N/A	N/A	N/A	TRIM/REMOVE
127802	TREE	54	56	-2	N/A	N/A	N/A	N/A	TRIM/REMOVE
127810	TREE	53	56	-3	N/A	N/A	N/A	N/A	TRIM/REMOVE
127818	TREE	49	57	-8	N/A	N/A	N/A	N/A	TRIM/REMOVE
127834	TREE	55	55	0	N/A	N/A	N/A	N/A	TRIM/REMOVE
127858	TREE	59	62	-2	N/A	N/A	N/A	N/A	TRIM/REMOVE
127914	TREE	62	71	-9	N/A	N/A	N/A	N/A	MONITOR
RD30L-1	PUBLIC ROAD	34	35	-1	N/A	N/A	N/A	N/A	NO ACTION
RD30L-2	PUBLIC ROAD	32	61	-29	N/A	N/A	N/A	N/A	NO ACTION
RD30L-3	PUBLIC ROAD	30	73	-43	N/A	N/A	N/A	N/A	NO ACTION
RD30L-4	PUBLIC ROAD	34	57	-23	N/A	N/A	N/A	N/A	NO ACTION
RD30L-5	PRIVATE ROAD	28	36	-8	N/A	N/A	N/A	N/A	NO ACTION
RD30L-6	PUBLIC ROAD	34	43	-9	N/A	N/A	N/A	N/A	NO ACTION
RR30L-1	RAILWAY	39	71	-32	N/A	N/A	N/A	N/A	NO ACTION

RUNWAY 12L OBSTRUCTION DATA TABLE

OBJECT DATA			EXISTING 20:1 14 CFR PART 77 VISUAL APPROACH SURFACE		FUTURE 20:1 CFR PART 77 VISUAL APPROACH SURFACE		EXISTING 20:1 THRESHOLD SITING SURFACE (SURFACE 2)		FUTURE 20:1 THRESHOLD SITING SURFACE (SURFACE 2)		PROPOSED DISPOSITION (PHASE)
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
95592	TREE	65	66	0	N/A	N/A	76	-11	N/A	N/A	TRIM/REMOVE
98438	RW 22 REIL	21	N/A	N/A	N/A	N/A	24	-3	N/A	N/A	FIXED BY FUNCTION
98446	RW 22 REIL	21	28	-7	N/A	N/A	38	-17	N/A	N/A	FIXED BY FUNCTION

NOTE:

1. TREES TO BE CLEARED AS NEEDED FOR RUNWAY 12L EXTENSION.

RUNWAY 30R OBSTRUCTION DATA TABLE

OBJECT DATA			EXISTING AND FUTURE				PROPOSED DISPOSITION (PHASE)
			20:1 14 CFR PART 77 VISUAL APPROACH SURFACE		20:1 THRESHOLD SITING SURFACE (SURFACE 2)		
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
5862	RR30R-1	29	76	-47	N/A	N/A	NO ACTION
5902	RD30R-1	18	81	-63	N/A	N/A	NO ACTION
5903	RR30R-2	30	87	-57	N/A	N/A	NO ACTION
5904	RD30R-2	17	92	-75	N/A	N/A	NO ACTION
5905	RR30R-3	30	98	-68	N/A	N/A	NO ACTION
5906	RD30R-3	17	103	-86	N/A	N/A	NO ACTION
82980	FENCE	28	N/A	N/A	35	-6	NO ACTION
83004	FENCE	28	N/A	N/A	36	-8	NO ACTION
83020	FENCE	28	N/A	N/A	36	-8	NO ACTION
83028	FENCE	28	N/A	N/A	37	-10	NO ACTION
120988	FENCE	28	N/A	N/A	43	-15	NO ACTION
120996	FENCE	28	N/A	N/A	47	-19	NO ACTION

GENERAL NOTES:

1. SELECTED OBJECTS FOR THE OBSTRUCTION ANALYSIS ARE OBJECTS THAT ARE LOCATED WITHIN THE PART 77 APPROACH SURFACE BOUNDARY. THEN, OBJECTS ARE FURTHER ANALYZED AS CLEARANCE OR PENETRATION ACCORDING TO THE SURFACES APPLIED TO RUNWAY END.
2. ONLY OBJECTS THAT PENETRATE OR ARE WITHIN 15 FEET OF PENETRATING THE PART 77 APPROACH SURFACE INCLUDED IN TABLE.
3. OBJECTS IN BOLDED TEXT ARE UNDER AIRPORT CONTROL WHETHER BY AN EXISTING AVIGATION EASEMENT OR LOCATED ON-AIRPORT PROPERTY.
4. REFER TO SHEET 23 AND 24 FOR RUNWAY 4 AND 22 OBSTRUCTION DATA TABLES, RESPECTIVELY.
5. REFER TO PLAN AND PROFILES ON SHEET 25 AND 27 FOR DEPARTURE SURFACE OBSTRUCTIONS.
6. REFER TO SHEET 28 FOR DEPARTURE SURFACE OBSTRUCTION DATA TABLES.
7. OBSTRUCTION SURVEY COMPLETED IN MAY 2023 AND COMPLIES TO FAA AC 150/5300-18B.
8. CLEARANCE OR PENETRATION MAY NOT MATCH OBJECT ELEVATION MINUS SURFACE ELEVATION DUE TO ROUNDING.
9. OBJECTS WITH A NEGATIVE NUMBER (-) ARE BELOW OR CLEAR OF THE RUNWAY SURFACE AND OBJECTS WITH A POSITIVE NUMBER (+) ARE ABOVE OR PENETRATE OF THE RUNWAY SURFACE.
10. OBJECTS WITH N/A ARE LOCATED OUTSIDE THE LIMITS OF THE APPLICABLE RUNWAY SURFACE.
11. EXISTING AND FUTURE ROAD ELEVATIONS ARE TRAVERSE WAY ELEVATION PLUS TRAVERSE WAY ADJUSTMENTS (23' FOR RAILWAYS, 17' FOR INTERSTATE HIGHWAYS, 15' FOR OTHER PUBLIC ROADS, OR 10' FOR PRIVATE ROADS).
12. ITS RECOMMENDED TO TRIM/REMOVE ALL TREES THAT PENETRATE OR ARE WITHIN 15 FEET OF THE PART 77 APPROACH SURFACE THAT ARE UNDER AIRPORT CONTROL (ON-AIRPORT PROPERTY OR EXISTING EASEMENT).

ABBREVIATIONS:

CFR: CODE OF FEDERAL REGULATIONS
IPASD: INNER PORTION OF THE APPROACH SURFACE DRAWING
MSL: MEAN SEA LEVEL

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AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE: AUGUST 2024
PROJECT NO: 20A0069W01
CAD FILE: 22-24_IPASD_OBS DATA TABLES.DWG
DESIGN BY: JA
DRAWN BY: JA
REVIEWED BY: SZ

SHEET TITLE

IPASD OBSTRUCTION DATA - RW 12L, 12R, 30L AND 30R

AUG 06, 2024 5:18 PM ALEXA02176
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RUNWAY 4 OBSTRUCTION DATA TABLE

OBJECT DATA			EXISTING AND FUTURE						PROPOSED DISPOSITION (PHASE)
			34:1 14 CFR PART 77 NON-PRECISION INSTRUMENT APPROACH SURFACE		20:1 THRESHOLD SITING SURFACE (SURFACE 5)		30:1 VERTICAL GUIDANCE SURFACE (SURFACE 6)		
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
95813	REIL	25	-	-	-	-	25	0	FIXED BY FUNCTION
95821	REIL	25	-	-	-	-	25	0	FIXED BY FUNCTION
96308	TREE	95	102	-7	157	-62	119	-24	MONITOR
96404	TREE	76	79	-3	119	-43	94	-18	MONITOR
96412	TREE	81	85	-4	128	-47	99	-18	MONITOR
96548	TREE	80	86	-7	130	-51	101	-22	MONITOR
96556	TREE	78	85	-7	129	-51	100	-22	MONITOR
96596	TREE	76	82	-6	123	-47	96	-21	MONITOR
96660	TREE	78	86	-8	130	-52	101	-23	MONITOR
96684	TREE	74	83	-9	125	-51	98	-24	MONITOR
96692	TREE	75	82	-7	123	-48	97	-21	MONITOR
96700	TREE	75	81	-6	121	-46	95	-20	MONITOR
96708	TREE	71	81	-9	121	-49	95	-24	MONITOR
96764	TREE	72	78	-5	116	-43	92	-19	MONITOR
96772	TREE	75	78	-4	116	-42	92	-18	MONITOR
96796	TREE	61	60	1	86	-25	72	-10	TRIM/REMOVE
96804	TREE	65	60	4	86	-22	72	-7	TRIM/REMOVE
96812	TREE	66	59	7	83	-16	70	-4	TRIM/REMOVE
96820	TREE	61	58	3	82	-21	82	-21	TRIM/REMOVE
97192	TREE	63	55	8	77	-14	77	-14	TRIM/REMOVE
97200	TREE	66	51	14	51	14	51	14	TRIM/REMOVE
97312	TREE	74	69	5	102	-27	102	-27	TRIM/REMOVE
98510	TREE	53	60	-7	86	-33	72	-19	TRIM/REMOVE
98518	TREE	59	63	-4	91	-32	75	-16	TRIM/REMOVE
98542	TREE	65	65	0	94	-29	N/A	N/A	TRIM/REMOVE
98566	TREE	69	69	0	100	-32	N/A	N/A	TRIM/REMOVE
98574	TREE	66	67	-1	97	-31	79	-13	TRIM/REMOVE
98582	TREE	67	65	2	93	-27	77	-10	TRIM/REMOVE
98686	TREE	64	63	2	91	-26	75	-10	TRIM/REMOVE
98694	TREE	58	63	-5	91	-33	75	-17	TRIM/REMOVE
98702	TREE	68	62	6	89	-21	74	-5	TRIM/REMOVE
98710	TREE	69	62	8	88	-19	73	-4	TRIM/REMOVE
98718	TREE	62	62	1	88	-26	73	-11	TRIM/REMOVE
98726	TREE	58	60	-3	86	-29	N/A	N/A	TRIM/REMOVE
98734	TREE	58	58	0	83	-24	N/A	N/A	TRIM/REMOVE
98758	TREE	82	91	-10	139	-57	107	-26	MONITOR
98790	TREE	84	93	-9	142	-57	109	-25	MONITOR
98798	TREE	85	94	-8	143	-57	110	-24	MONITOR
99158	TREE	78	82	-4	123	-45	96	-19	MONITOR
99198	POLE	66	70	-4	102	-36	83	-17	NO ACTION
99214	POLE	58	64	-6	92	-34	N/A	N/A	NO ACTION
99254	POLE	62	71	-8	104	-42	84	-21	NO ACTION
99270	POLE	65	66	-1	96	-31	79	-14	NO ACTION
99286	TRAFFIC SIGNAL	62	68	-6	100	-38	81	-19	NO ACTION
99310	POLE	62	63	-1	91	-29	75	-13	NO ACTION
99318	POLE	63	60	3	85	-22	N/A	N/A	NO ACTION
99438	TREE	73	82	-9	123	-50	N/A	N/A	MONITOR
121375	TREE	48	49	-1	49	-1	N/A	N/A	TRIM/REMOVE
121383	TREE	45	49	-4	49	-4	N/A	N/A	TRIM/REMOVE
121391	TREE	60	50	10	50	10	N/A	N/A	TRIM/REMOVE
121399	TREE	59	50	9	N/A	N/A	N/A	N/A	TRIM/REMOVE
121407	TREE	62	50	12	N/A	N/A	N/A	N/A	TRIM/REMOVE

RUNWAY 4 OBSTRUCTION DATA TABLE

OBJECT DATA			EXISTING AND FUTURE						PROPOSED DISPOSITION (PHASE)
			34:1 14 CFR PART 77 NON-PRECISION INSTRUMENT APPROACH SURFACE		20:1 THRESHOLD SITING SURFACE (SURFACE 5)		30:1 VERTICAL GUIDANCE SURFACE (SURFACE 6)		
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
121415	TREE	59	52	7	N/A	N/A	N/A	N/A	TRIM/REMOVE
121423	TREE	44	53	-9	N/A	N/A	N/A	N/A	TRIM/REMOVE
121431	TREE	49	53	-4	74	-25	N/A	N/A	TRIM/REMOVE
121439	TREE	51	54	-3	N/A	N/A	N/A	N/A	TRIM/REMOVE
121447	TREE	58	54	4	76	-17	N/A	N/A	TRIM/REMOVE
121455	TREE	48	54	-6	75	-27	N/A	N/A	TRIM/REMOVE
121463	TREE	47	54	-8	76	-29	N/A	N/A	TRIM/REMOVE
121471	TREE	51	55	-3	76	-25	N/A	N/A	TRIM/REMOVE
121479	TREE	49	54	-5	N/A	N/A	N/A	N/A	TRIM/REMOVE
121487	TREE	50	54	-4	N/A	N/A	N/A	N/A	TRIM/REMOVE
121495	TREE	45	55	-9	N/A	N/A	N/A	N/A	TRIM/REMOVE
121503	TREE	49	55	-5	76	-27	N/A	N/A	TRIM/REMOVE
121511	TREE	48	55	-8	78	-30	N/A	N/A	TRIM/REMOVE
121519	TREE	49	56	-7	78	-29	N/A	N/A	TRIM/REMOVE
121527	TREE	47	56	-9	79	-32	N/A	N/A	TRIM/REMOVE
121535	TREE	48	56	-8	79	-31	N/A	N/A	TRIM/REMOVE
121543	TREE	46	55	-9	78	-32	N/A	N/A	TRIM/REMOVE
121551	TREE	55	57	-2	81	-26	N/A	N/A	TRIM/REMOVE
121559	TREE	57	57	0	81	-24	N/A	N/A	TRIM/REMOVE
121567	TREE	58	58	0	82	-24	N/A	N/A	TRIM/REMOVE
121575	TREE	62	59	4	83	-21	N/A	N/A	TRIM/REMOVE
121583	TREE	60	59	0	85	-25	71	-11	TRIM/REMOVE
121591	TREE	55	59	-4	84	-29	70	-15	TRIM/REMOVE
121599	TREE	50	60	-9	85	-34	71	-21	TRIM/REMOVE
121607	TREE	54	60	-6	86	-32	72	-18	TRIM/REMOVE
121615	TREE	54	60	-6	86	-31	71	-17	TRIM/REMOVE
121623	TREE	51	60	-10	86	-35	72	-21	MONITOR
121631	TREE	51	60	-9	86	-34	71	-20	TRIM/REMOVE
121639	TREE	56	60	-5	86	-31	72	-16	TRIM/REMOVE
121647	TREE	52	60	-8	86	-34	71	-20	TRIM/REMOVE
121655	TREE	58	60	-2	85	-28	71	-14	TRIM/REMOVE
121663	TREE	57	61	-3	87	-29	72	-15	TRIM/REMOVE
121671	TREE	58	57	2	80	-22	N/A	N/A	TRIM/REMOVE
121679	TREE	59	56	3	79	-20	N/A	N/A	TRIM/REMOVE
121687	TREE	48	56	-8	79	-31	N/A	N/A	TRIM/REMOVE
121695	TREE	48	55	-7	77	-29	N/A	N/A	TRIM/REMOVE
121703	TREE	49	54	-5	75	-26	N/A	N/A	TRIM/REMOVE
121711	TREE	50	54	-4	N/A	N/A	N/A	N/A	TRIM/REMOVE
121719	TREE	47	53	-6	N/A	N/A	N/A	N/A	TRIM/REMOVE
121727	TREE	45	53	-8	N/A	N/A	N/A	N/A	TRIM/REMOVE
121735	TREE	53	52	0	N/A	N/A	N/A	N/A	TRIM/REMOVE
121743	TREE	59	63	-4	N/A	N/A	N/A	N/A	TRIM/REMOVE
121751	TREE	67	68	-1	N/A	N/A	N/A	N/A	TRIM/REMOVE
121759	TREE	68	69	-1	N/A	N/A	N/A	N/A	TRIM/REMOVE
121767	TREE	70	79	-9	N/A	N/A	N/A	N/A	MONITOR
121775	TREE	72	81	-8	121	-49	95	-23	MONITOR
121783	TREE	76	81	-5	122	-45	96	-19	MONITOR
121791	TREE	69	79	-10	117	-48	93	-24	MONITOR
121799	TREE	69	78	-9	116	-47	92	-23	MONITOR
121807	TREE	70	79	-9	117	-47	N/A	N/A	MONITOR
121815	TREE	72	80	-8	120	-48	N/A	N/A	MONITOR
121823	TREE	75	81	-6	122	-47	96	-21	MONITOR
129377	TREE	53	58	-6	83	-30	83	-30	TRIM/REMOVE
130743	TREE	76	82	-6	123	-48	97	-21	MONITOR
RD4-1	EX ROAD	39	57	-18	N/A	N/A	N/A	N/A	NO ACTION
RD4-2	EX ROAD	38	66	-28	N/A	N/A	N/A	N/A	NO ACTION
RD4-3	EX ROAD	38	57	-19	N/A	N/A	N/A	N/A	NO ACTION

GENERAL NOTES:

1. SELECTED OBJECTS FOR THE OBSTRUCTION ANALYSIS ARE OBJECTS THAT ARE LOCATED WITHIN THE PART 77 APPROACH SURFACE BOUNDARY. THEN, OBJECTS ARE FURTHER ANALYZED AS CLEARANCE OR PENETRATION ACCORDING TO THE SURFACES APPLIED TO RUNWAY END.
2. ONLY OBJECTS THAT PENETRATE OR ARE WITHIN 15 FEET OF PENETRATING THE PART 77 APPROACH SURFACE INCLUDED IN TABLE.
3. OBJECTS IN BOLDED TEXT ARE UNDER AIRPORT CONTROL WHETHER BY AN EXISTING AVIGATION EASEMENT OR LOCATED ON-AIRPORT PROPERTY.
4. REFER TO SHEET 22 FOR RUNWAY 12R, 30L, 12L AND 30R OBSTRUCTION DATA TABLES, RESPECTIVELY.
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7. OBSTRUCTION SURVEY COMPLETED IN MAY 2023 AND COMPLIES TO FAA AC 150/5300-18B.
8. CLEARANCE OR PENETRATION MAY NOT MATCH OBJECT ELEVATION MINUS SURFACE ELEVATION DUE TO ROUNDING.
9. OBJECTS WITH A NEGATIVE NUMBER (-) ARE BELOW OR CLEAR OF THE RUNWAY SURFACE AND OBJECTS WITH A POSITIVE NUMBER (+) ARE ABOVE OR PENETRATE OF THE RUNWAY SURFACE.
10. OBJECTS WITH N/A ARE LOCATED OUTSIDE THE LIMITS OF THE APPLICABLE RUNWAY SURFACE.
11. EXISTING AND FUTURE ROAD ELEVATIONS ARE TRAVERSE WAY ELEVATION PLUS TRAVERSE WAY ADJUSTMENTS (23' FOR RAILWAYS, 17' FOR INTERSTATE HIGHWAYS, 15' FOR OTHER PUBLIC ROADS, OR 10' FOR PRIVATE ROADS).
12. ITS RECOMMENDED TO TRIM/REMOVE ALL TREES THAT PENETRATE OR ARE WITHIN 15 FEET OF THE PART 77 APPROACH SURFACE THAT ARE UNDER AIRPORT CONTROL (ON-AIRPORT PROPERTY OR EXISTING EASEMENT).

ABBREVIATIONS:

CFR: CODE OF FEDERAL REGULATIONS
IPASD: INNER PORTION OF THE APPROACH SURFACE DRAWING
MSL: MEAN SEA LEVEL

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VERO BEACH REGIONAL AIRPORT

VERO BEACH REGIONAL AIRPORT
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VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE: AUGUST 2024
PROJECT NO: 20A0069W01
CAD FILE: 22-24_IPASD_OBS DATA TABLES.DWG
DESIGN BY: JA
DRAWN BY: JA
REVIEWED BY: SZ

SHEET TITLE

IPASD OBSTRUCTION DATA - RW 4

AUG 06, 2024 5:18 PM ALEXA02176
I:\20JOBS\20A0069W01\CAD\AIRPORT\SHEET\ALP\22-24_IPASD_OBS DATA TABLES.DWG

RUNWAY 22 OBSTRUCTION DATA TABLE

OBJECT DATA			EXISTING 34:1 14 CFR PART 77 NON.PRECISION INSTRUMENT APPROACH SURFACE		FUTURE 34:1 14 CFR PART 77 NON.PRECISION INSTRUMENT APPROACH SURFACE		EXISTING 20:1 THRESHOLD SITING SURFACE (SURFACE 5)		FUTURE 20:1 THRESHOLD SITING SURFACE (SURFACE 5)		EXISTING 30:1 VERTICAL GUIDANCE SURFACE (SURFACE 6)		FUTURE 30:1 VERTICAL GUIDANCE SURFACE (SURFACE 6)		PROPOSED DISPOSITION (PHASE)
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
5864	POLE	58	88	-30	67	-9	135	-77	N/A	N/A	N/A	N/A	N/A	N/A	NO ACTION
5865	POLE	50	88	-39	67	-18	136	-86	N/A	N/A	N/A	N/A	N/A	N/A	NO ACTION
5866	POLE	58	94	-35	N/A	N/A	145	-86	N/A	N/A	N/A	N/A	N/A	N/A	NO ACTION
5867	POLE	54	95	-41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NO ACTION
5868	POLE	54	98	-43	76	-22	151	-97	115	-61	N/A	N/A	N/A	N/A	NO ACTION
5869	POLE	61	100	-39	79	-18	156	-95	120	-59	N/A	N/A	N/A	N/A	NO ACTION
5870	POLE	55	103	-48	82	-27	161	-106	125	-70	121	-66	97	-42	NO ACTION
5871	POLE	55	107	-51	85	-30	167	-111	131	-75	125	-69	101	-45	NO ACTION
5872	POLE	56	109	-53	88	-32	171	-115	135	-79	127	-71	103	-47	NO ACTION
5873	POLE	60	112	-52	91	-31	176	-116	140	-80	131	-71	107	-47	NO ACTION
5874	POLE	55	115	-60	93	-38	181	-125	145	-89	134	-79	N/A	N/A	NO ACTION
5875	POLE	56	118	-62	97	-41	186	-130	150	-94	N/A	N/A	N/A	N/A	NO ACTION
5876	POLE	81	116	-35	95	-14	183	-102	147	-65	N/A	N/A	N/A	N/A	NO ACTION
5877	POLE	56	112	-56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NO ACTION
5878	POLE	49	112	-63	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NO ACTION
5879	POLE	65	109	-44	88	-22	171	-105	N/A	N/A	N/A	N/A	N/A	N/A	NO ACTION
5880	POLE	39	109	-70	88	-49	172	-132	N/A	N/A	N/A	N/A	N/A	N/A	NO ACTION
5881	POLE	52	110	-57	88	-36	172	-120	136	-84	N/A	N/A	N/A	N/A	NO ACTION
5882	POLE	60	106	-46	84	-25	165	-106	129	-69	N/A	N/A	N/A	N/A	NO ACTION
5883	POLE	51	106	-55	85	-34	166	-115	130	-79	N/A	N/A	N/A	N/A	NO ACTION
5884	POLE	75	111	-36	89	-14	174	-99	137	-63	129	-54	105	-30	NO ACTION
5885	POLE	59	102	-43	81	-21	159	-100	123	-64	120	-60	95	-36	NO ACTION
5886	POLE	50	102	-52	81	-31	160	-110	124	-74	120	-70	96	-46	NO ACTION
5887	POLE	58	99	-41	77	-19	153	-95	117	-59	116	-58	92	-34	NO ACTION
5888	POLE	51	99	-48	78	-27	154	-103	118	-67	116	-65	92	-41	NO ACTION
5889	POLE	67	105	-38	84	-16	164	-97	128	-60	123	-56	99	-31	NO ACTION
5890	POLE	62	95	-33	74	-12	147	-85	111	-49	111	-50	87	-26	NO ACTION
5891	POLE	52	95	-43	74	-22	148	-96	112	-59	112	-60	88	-36	NO ACTION
5892	POLE	63	99	-36	78	-15	155	-92	118	-55	117	-54	92	-30	NO ACTION
5893	POLE	61	92	-31	70	-10	141	-81	105	-44	108	-47	N/A	N/A	NO ACTION
5894	POLE	51	92	-41	71	-20	142	-91	106	-55	108	-57	N/A	N/A	NO ACTION
98438	REIL	21	21	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	FIXED BY FUNCTION
98446	REIL	21	21	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	FIXED BY FUNCTION
100852	TREE	47	53	-6	31	15	75	-29	39	8	N/A	N/A	N/A	N/A	TRIM/REMOVE
100860	TREE	57	53	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
101404	TREE	63	71	-8	49	13	106	-43	70	-7	N/A	N/A	N/A	N/A	TRIM/REMOVE
101420	TREE	62	71	-9	50	13	106	-44	70	-8	84	-22	60	2	TRIM/REMOVE
101428	TREE	69	74	-5	53	16	112	-43	76	-7	88	-19	64	5	TRIM/REMOVE
101452	TREE	66	75	-10	54	11	114	-48	78	-12	89	-24	65	0	TRIM/REMOVE
101468	TREE	70	79	-9	58	12	120	-50	83	-14	93	-23	69	1	TRIM/REMOVE
101492	TREE	69	77	-8	56	13	117	-48	80	-12	91	-22	N/A	N/A	TRIM/REMOVE
101772	TREE	44	53	-9	31	12	75	-32	39	5	N/A	N/A	N/A	N/A	TRIM/REMOVE
101820	TREE	47	56	-9	34	12	80	-34	44	3	67	-20	43	4	TRIM/REMOVE
101828	TREE	47	56	-9	35	12	81	-34	45	2	67	-21	43	3	TRIM/REMOVE
101836	TREE	52	56	-4	35	17	81	-29	44	7	67	-15	N/A	N/A	TRIM/REMOVE
101844	TREE	47	56	-10	35	11	81	-35	45	1	68	-21	N/A	N/A	TRIM/REMOVE
101916	TREE	60	68	-8	47	13	101	-41	65	-5	81	-21	N/A	N/A	TRIM/REMOVE
101924	TREE	63	68	-5	47	16	102	-39	66	-2	81	-18	N/A	N/A	TRIM/REMOVE
102348	TREE	100	108	-8	87	13	170	-70	134	-33	127	-26	103	-2	MONITOR
102356	TREE	105	109	-4	88	18	171	-66	135	-29	127	-22	103	2	MONITOR
102364	TREE	103	110	-6	88	15	172	-69	136	-33	128	-25	104	-1	MONITOR
103874	TREE	76	70	6	N/A	N/A	105	-29	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
121943	TREE	55	57	-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
121967	TREE	58	58	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
121975	TREE	50	54	-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
121983	TREE	54	54	-1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125671	TREE	67	70	-3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125687	TREE	69	71	-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125695	TREE	69	71	-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125759	TREE	44	52	-8	31	13	74	-30	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125767	TREE	45	53	-8	31	13	75	-30	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125775	TREE	46	52	-7	31	15	75	-29	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125783	TREE	43	53	-9	31	12	75	-32	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125791	TREE	43	53	-9	31	12	75	-32	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125799	TREE	43	52	-9	32	12	75	-31	38	5	N/A	N/A	N/A	N/A	TRIM/REMOVE
125807	TREE	45	53	-8	32	13	75	-30	39	6	N/A	N/A	N/A	N/A	TRIM/REMOVE
125815	TREE	44	53	-9	31	13	76	-32	39	4	76	-32	N/A	N/A	TRIM/REMOVE
125823	TREE	43	52	-9	31	12	75	-31	39	5	N/A	N/A	N/A	N/A	TRIM/REMOVE
125831	TREE	47	53	-6	32	15	75	-28	39	8	64	-17	39	7	TRIM/REMOVE
125839	TREE	44	53	-9	N/A	N/A	76	-32	40	4	N/A	N/A	N/A	N/A	TRIM/REMOVE
125847	TREE	46	53	-7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125855	TREE	44	52	-8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125863	TREE	45	53	-9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125871	TREE	45	54	-9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125879	TREE	45	53	-9	N/A	N/A	76	-32	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125887	TREE	52	61	-9	N/A	N/A	90	-38	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125895	TREE	54	60	-6	N/A	N/A	88	-34	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125903	TREE	61	61	1	N/A	N/A	89	-27	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125911	TREE	47	56	-9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125919	TREE	47	56	-9	N/A	N/A	81	-35	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125927	TREE	47	56	-9	N/A	N/A	81	-34	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125935	TREE	46	55	-9	N/A	N/A	80	-34	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125943	TREE	65	70	-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125951	TREE	70	71	-1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125959	TREE	63	71	-7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125967	TREE	67	72	-5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125975	TREE	68	73	-5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125983	TREE	66	72	-6	50	15	107	-42	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
125991	TREE	65	72	-7	51	14	108	-44	72	-7	N/A	N/A	N/A	N/A	TRIM/REMOVE
125999	TREE	62	71	-10	50	12	107	-45	71	-9	85	-23	61	1	TRIM/REMOVE
126007	TREE	43	52	-10	N/A	N/A	75	-32	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
126015	TREE	46	56	-9	34	12	80	-34	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE
126023	TREE	80	89	-9	N/A	N/A	138	-57	N/A	N/A	N/A	N/A	N/A	N/A	TRIM/REMOVE

GENERAL NOTES:

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2. ONLY OBJECTS THAT PENETRATE OR ARE WITHIN 15 FEET OF PENETRATING THE PART 77 APPROACH SURFACE INCLUDED IN TABLE.
3. OBJECTS IN BOLDED TEXT ARE UNDER AIRPORT CONTROL WHETHER BY AN EXISTING AVIGATION EASEMENT OR LOCATED ON-AIRPORT PROPERTY.
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12. ITS RECOMMENDED TO TRIM/REMOVE ALL TREES THAT PENETRATE OR ARE WITHIN 15 FEET OF THE PART 77 APPROACH SURFACE THAT ARE UNDER AIRPORT CONTROL (ON-AIRPORT PROPERTY OR EXISTING EASEMENT).
13. TREES TO BE CLEARED AS NEEDED FOR RUNWAY 22 EXTENSION.

ABBREVIATIONS:

CFR: CODE OF FEDERAL REGULATIONS
IPASD: INNER PORTION OF THE APPROACH SURFACE DRAWING
MSL: MEAN SEA LEVEL

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AIRPORT LAYOUT PLAN
DRAWINGS SET

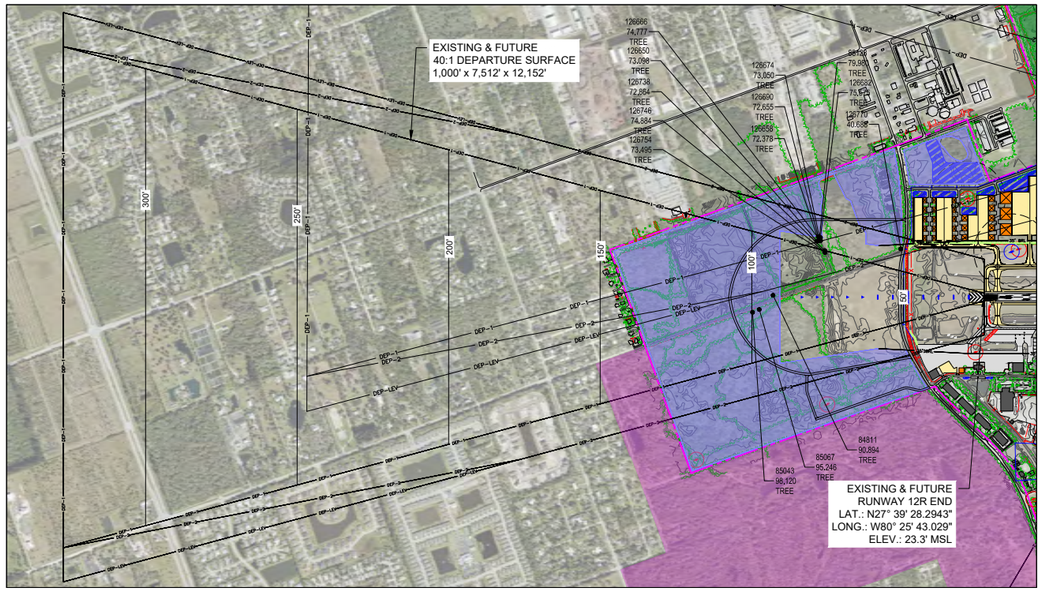
DATE	REVISION DESCRIPTION	BY

ISSUE: AUGUST 2024
PROJECT NO: 20A0069W01
CAD FILE: 22-24_IPASD_OBS DATA TABLES.DWG
DESIGN BY: JA
DRAWN BY: JA
REVIEWED BY: SZ

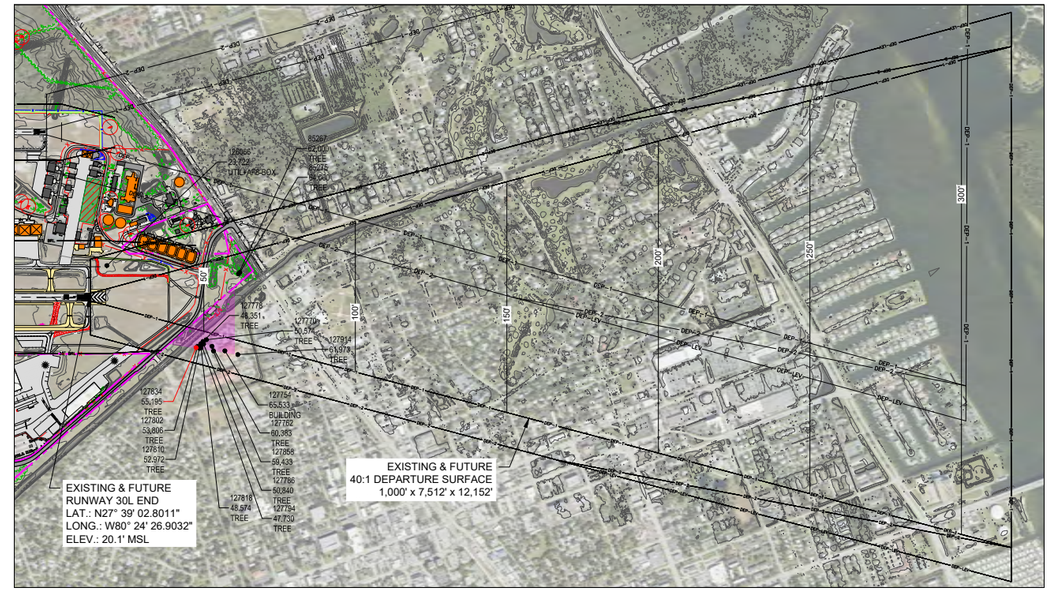
SHEET TITLE

IPASD OBSTRUCTION DATA - RW 22

AUG 06, 2024 5:18 PM ALEXA02176
I:\20JOBS\20A0069W01\CAD\AIRPORT\SHEET\ALP\22-24_IPASD_OBS DATA TABLES.DWG

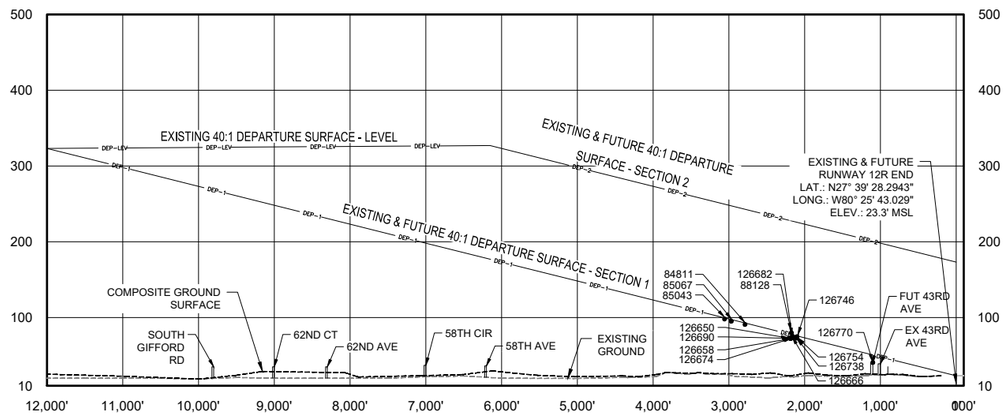


EXISTING & FUTURE RUNWAY 12R END - PLAN

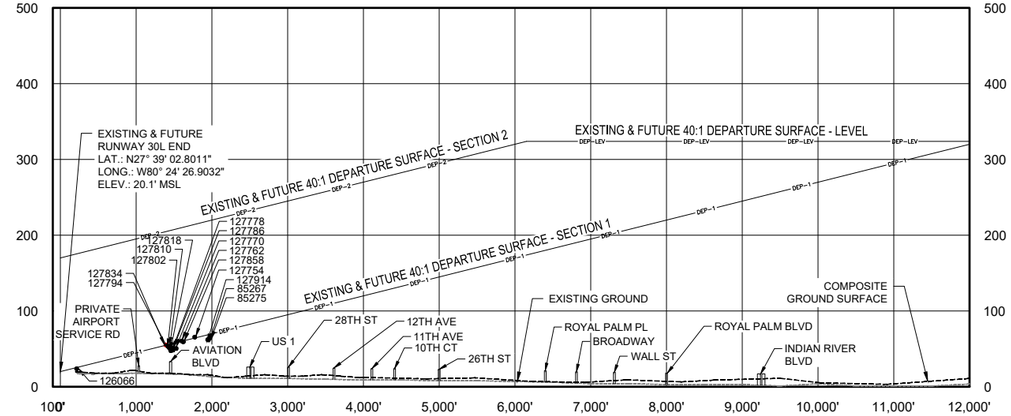


EXISTING & FUTURE RUNWAY 30L END - PLAN

EXISTING & FUTURE RUNWAY 12R END - PROFILE



EXISTING & FUTURE RUNWAY 30L END - PROFILE



REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

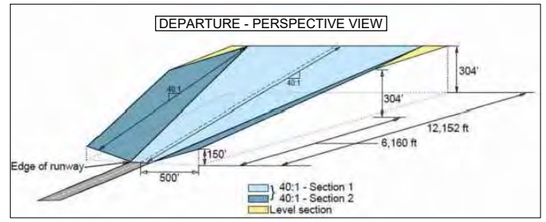
GENERAL NOTES:

1. FOR CLARITY, ONLY OBJECTS THAT PENETRATE THE FUTURE 40:1 DEPARTURE SURFACE ARE LABELED IN THE PROFILE.
2. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".

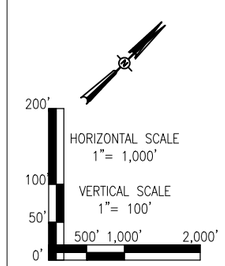
OBSTRUCTION NOTES:

1. OBSTRUCTION INFORMATION OBTAINED FROM NV5 GEOSPATIAL IN MAY 2023.
2. TREES SHOWN AS OBJECTS MAY REPRESENT MULTIPLE TREES.
3. SEE OBSTRUCTION DATA TABLE SHEETS 28.

DEPARTURE - PERSPECTIVE VIEW



MAGNETIC DECLINATION (FEBRUARY 2024)
7.28° W ±0.34°, CHANGING 0.08° W PER YEAR



NOTE: OBSTRUCTIONS SHOWN IN PLAN AND PROFILE VIEWS ARE DEPARTURE SURFACE PENETRATIONS OR OBJECTS WITHIN 15 FEET OF DEPARTURE SURFACE.

- ● OBJECTS WITHIN 15 FEET OF DEPARTURE SURFACE
- ● DEPARTURE SURFACE PENETRATIONS

EXISTING	FUTURE	LEGEND
		AIRPORT PROPERTY LINE
		AIRPORT FENCE (10 FT)
		AIRPORT EASEMENT
	SAME	ROADS
		BUILDINGS (ON-AIRPORT PROPERTY)
	SAME	BUILDINGS (OFF-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
DEP-1	DEP-1	DEPARTURE SURFACE - SECTION 1 (DEP-1)
DEP-2	DEP-2	DEPARTURE SURFACE - SECTION 2 (DEP-2)
DEP-LEV	DEP-LEV	DEPARTURE SURFACE - LEVEL SECTION

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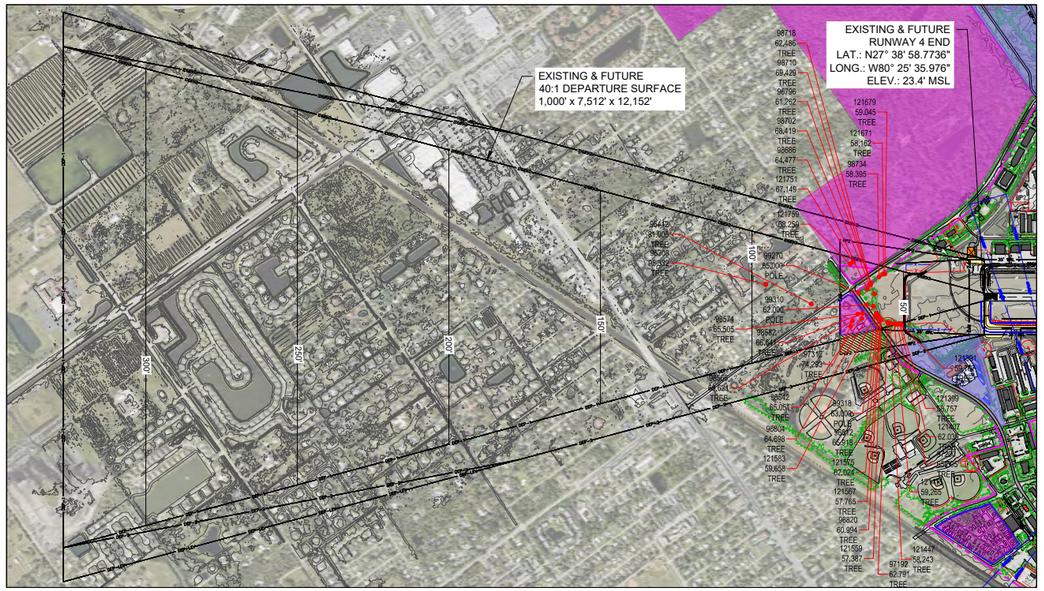
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

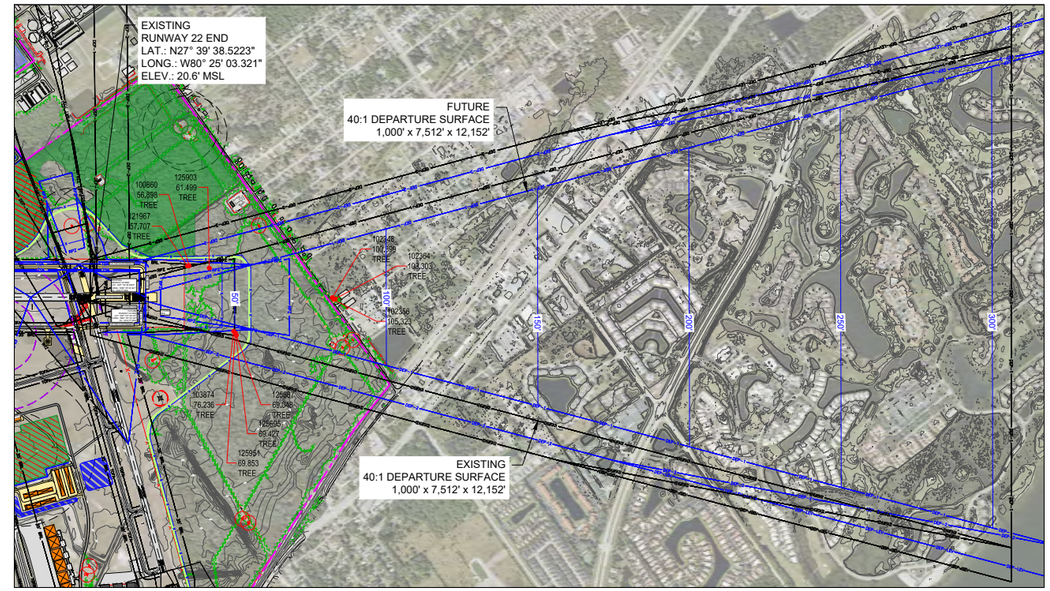
SHEET TITLE

RUNWAY 12R-30L
DEPARTURE SURFACE
DRAWING

AUG 06, 2024 5:19 PM ALEXA02176
I:\20JOBS\20A0069W01\CAD\AIRPORT\SHEET\ALP\25_DS_RW 12R-30L_E&F.DWG

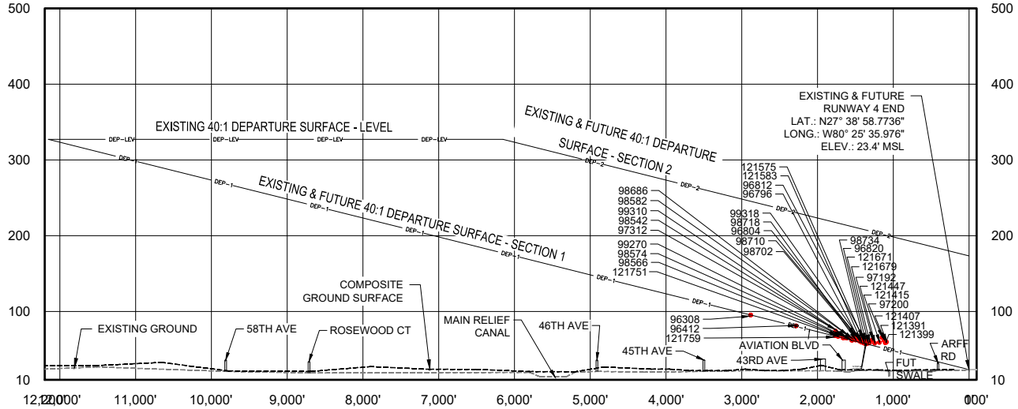


EXISTING & FUTURE RUNWAY 4 END - PLAN

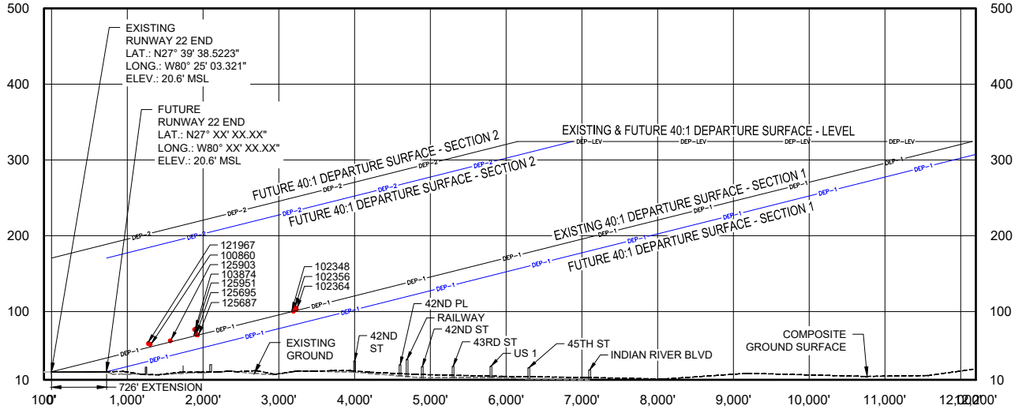


EXISTING & FUTURE RUNWAY 22 END - PLAN

EXISTING & FUTURE RUNWAY 4 END - PROFILE



EXISTING & FUTURE RUNWAY 22 END - PROFILE



REFERENCES:

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OBSTRUCTION NOTES:

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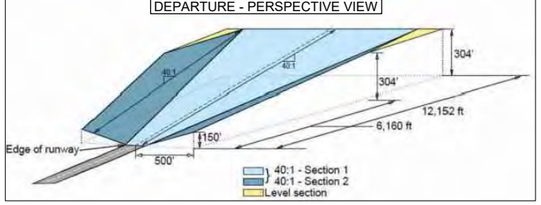
3. SEE OBSTRUCTION DATA TABLE SHEETS 28.

DEPARTURE - PERSPECTIVE VIEW



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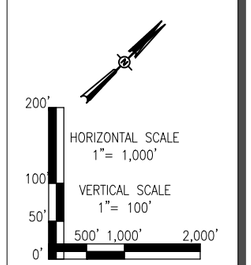

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- ● OBJECTS WITHIN 15 FEET OF DEPARTURE SURFACE
- ● DEPARTURE SURFACE PENETRATIONS

EXISTING	FUTURE	LEGEND
	SAME	AIRPORT PROPERTY LINE
		AIRPORT FENCE (10 FT)
		AIRPORT EASEMENT
	SAME	ROADS
		BUILDINGS (ON-AIRPORT PROPERTY)
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		AIRFIELD PAVEMENT
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AIRPORT LAYOUT PLAN
DRAWINGS SET

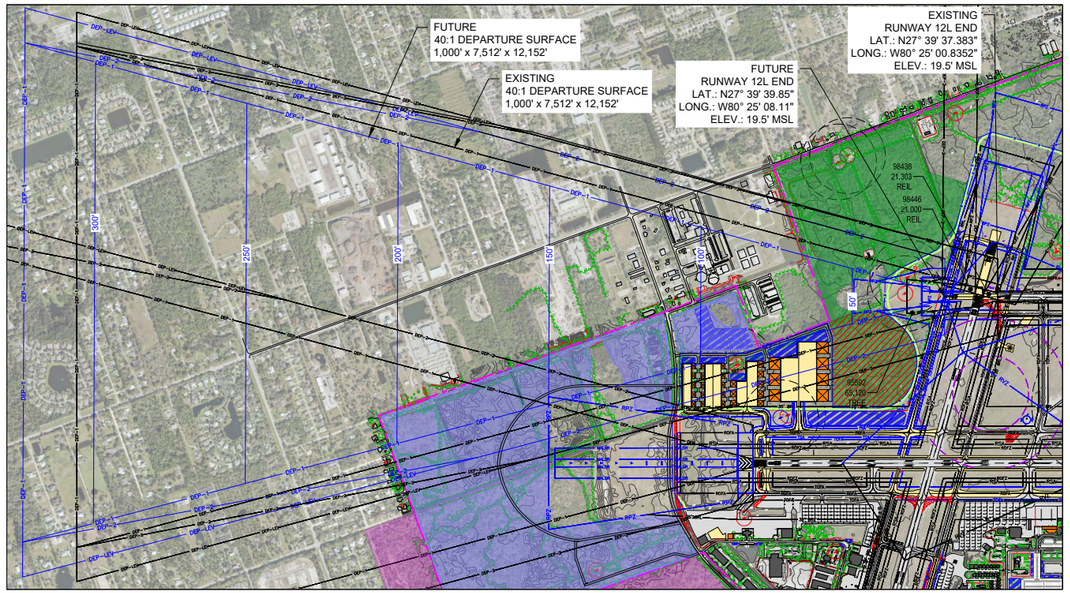
DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	26_DS_RW 4-22_E&F.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

RUNWAY 4-22
DEPARTURE SURFACE
DRAWING

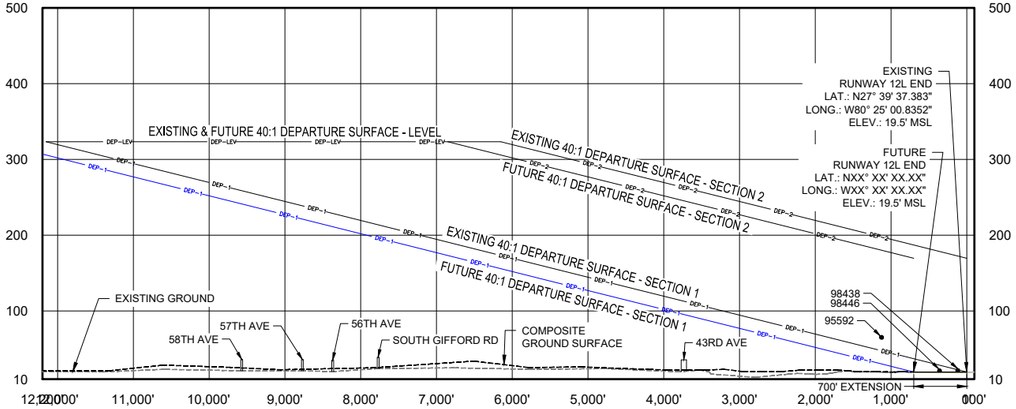
AUG 06, 2024 5:21 PM ALEXA02176
I:\20JOBS\20A0069W01\CAD\AIRPORT\SHEET\ALP\26_DS_RW 4-22_E&F.DWG



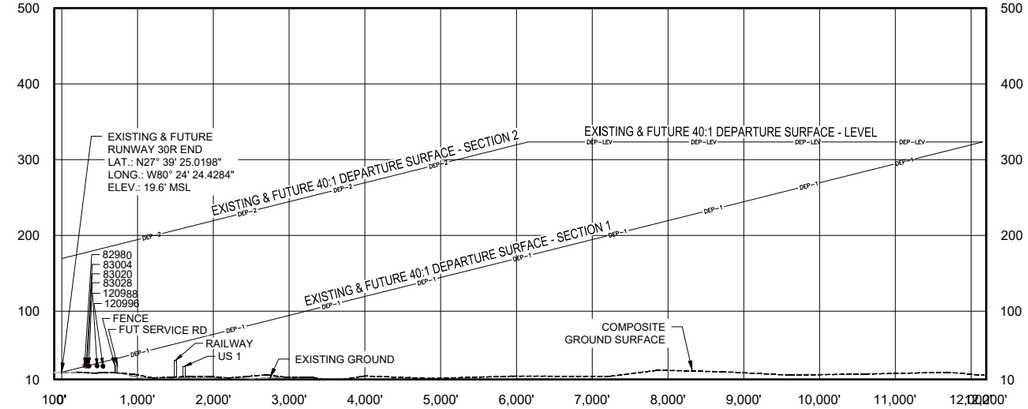
EXISTING & FUTURE RUNWAY 12L END - PLAN

EXISTING & FUTURE RUNWAY 30R END - PLAN

EXISTING & FUTURE RUNWAY 12L END - PROFILE



EXISTING & FUTURE RUNWAY 30R END - PROFILE



REFERENCES:

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OBSTRUCTION NOTES:

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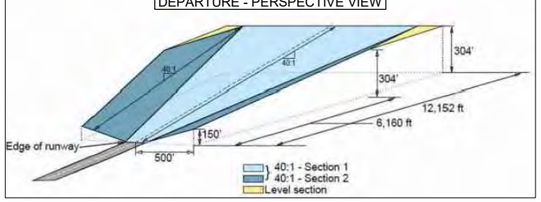
3. SEE OBSTRUCTION DATA TABLE SHEETS 28.

DEPARTURE - PERSPECTIVE VIEW



MAGNETIC DECLINATION (FEBRUARY 2024)
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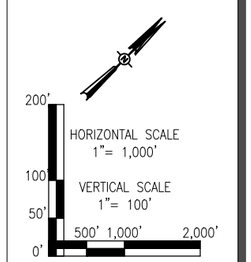

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- ● OBJECTS WITHIN 15 FEET OF DEPARTURE SURFACE
- ● DEPARTURE SURFACE PENETRATIONS

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	SAME	AIRPORT PROPERTY LINE
		AIRPORT FENCE (10 FT)
		AIRPORT EASEMENT
	SAME	ROADS
		BUILDINGS (ON-AIRPORT PROPERTY)
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AIRPORT LAYOUT PLAN
DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	27_DS_RW 12L-30R_E&F.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

RUNWAY 12L-30R
DEPARTURE SURFACE
DRAWING

AUG 06, 2024 5:22 PM ALEXA02176
I:\20JOBS\20A0069W01\CAD\AIRPORT\SHEET\ALP\27_DS_RW 12L-30R_E&F.DWG

RUNWAY 12R OBSTRUCTION DATA TABLE

OBJECT DATA			EXISTING AND FUTURE		PROPOSED DISPOSITION
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	40:1 TERPS DEPARTURE SURFACE (SURFACE 7)		
			SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
84811	TREE	91	93	-2	TRIM/REMOVE
85043	TREE	98	100	-2	TRIM/REMOVE
85067	TREE	95	97	-2	TRIM/REMOVE
88128	TREE	80	129	-49	MONITOR
107321	EX ROAD	39	-	-	NO ACTION
107353	EX ROAD	39	-	-	NO ACTION
107393	EX ROAD	39	-	-	NO ACTION
126650	TREE	73	129	-56	MONITOR
126658	TREE	72	129	-57	MONITOR
126666	TREE	75	129	-55	MONITOR
126674	TREE	73	129	-56	MONITOR
126682	TREE	76	129	-54	MONITOR
126690	TREE	73	129	-57	MONITOR
126738	TREE	73	76	-3	TRIM/REMOVE
126746	TREE	75	76	-1	TRIM/REMOVE
126754	TREE	73	76	-2	TRIM/REMOVE
126770	TREE	41	148	-107	MONITOR
FUTRD12R-1	FUT ROAD	37	-	-	NO ACTION
FUTRD12R-2	FUT ROAD	40	-	-	NO ACTION
FUTRD12R-3	FUT ROAD	37	-	-	NO ACTION

RUNWAY 30L OBSTRUCTION DATA TABLE

OBJECT DATA			EXISTING AND FUTURE		PROPOSED DISPOSITION (PHASE)
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	40:1 TERPS DEPARTURE SURFACE (SURFACE 7)		
			SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
85267	TREE	62	69	-7	TRIM/REMOVE
85275	TREE	64	69	-5	TRIM/REMOVE
126066	UTILITY BOX	24	128	-104	FIXED BY FUNCTION
127754	BUILDING	66	125	-60	NO ACTION
127762	TREE	60	96	-36	MONITOR
127770	TREE	51	92	-42	MONITOR
127778	TREE	48	103	-54	MONITOR
127786	TREE	51	114	-63	MONITOR
127794	TREE	48	115	-67	MONITOR
127802	TREE	54	129	-75	MONITOR
127810	TREE	53	136	-83	MONITOR
127818	TREE	49	136	-88	MONITOR
127834	TREE	55	136	-81	MONITOR
127858	TREE	59	116	-56	MONITOR
127914	TREE	62	131	-69	MONITOR
RD30L-1	PUBLIC ROAD	34	-	-	NO ACTION
RD30L-2	PUBLIC ROAD	32	-	-	NO ACTION
RD30L-3	PUBLIC ROAD	30	-	-	NO ACTION
RD30L-4	PUBLIC ROAD	34	-	-	NO ACTION
RD30L-5	PRIVATE ROAD	28	-	-	NO ACTION
RD30L-6	PUBLIC ROAD	34	-	-	NO ACTION
RR30L-1	RAILWAY	39	-	-	NO ACTION

RUNWAY 12L OBSTRUCTION DATA TABLE

OBJECT DATA			EXISTING 40:1 TERPS DEPARTURE SURFACE (SURFACE 7)		FUTURE 40:1 TERPS DEPARTURE SURFACE (SURFACE 7)		PROPOSED DISPOSITION (PHASE)
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
95592	TREE	65	48	18	52	14	TRIM/REMOVE
98438	REIL	21	22	-1	N/A	N/A	FIXED BY FUNCTION
98446	REIL	21	28	-7	N/A	N/A	FIXED BY FUNCTION

RUNWAY 30R OBSTRUCTION DATA TABLE

OBJECT DATA			EXISTING AND FUTURE		PROPOSED DISPOSITION (PHASE)
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	40:1 TERPS DEPARTURE SURFACE (SURFACE 7)		
			SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
5862	RR30R-1	29	-	-	NO ACTION
5902	RD30R-1	18	-	-	NO ACTION
5903	RR30R-2	30	-	-	NO ACTION
5904	RD30R-2	17	-	-	NO ACTION
5905	RR30R-3	30	-	-	NO ACTION
5906	RD30R-3	17	-	-	NO ACTION
82980	FENCE	28	38	-10	NO ACTION
83004	FENCE	28	35	-7	NO ACTION
83020	FENCE	28	34	-6	NO ACTION
83028	FENCE	28	32	-5	NO ACTION
120988	FENCE	28	31	-3	NO ACTION
120996	FENCE	28	33	-6	NO ACTION

NOTES:

1. SELECTED OBJECTS FOR THE OBSTRUCTION ANALYSIS ARE OBJECTS THAT ARE LOCATED WITHIN THE PART 77 APPROACH SURFACE BOUNDARY. THEN, OBJECTS ARE FURTHER ANALYZED AS CLEARANCE OR PENETRATION ACCORDING TO THE SURFACES APPLIED TO RUNWAY END.
2. REFER TO SHEET 29 FOR RUNWAY 4 AND 22 OBSTRUCTION DATA TABLES.
3. REFER TO PLAN AND PROFILES ON SHEETS 25 AND 27 FOR DEPARTURE SURFACE OBSTRUCTIONS.
4. OBSTRUCTION SURVEY COMPLETED IN MAY 2023 AND COMPLIES TO FAA AC 150/5300-18B.
5. CLEARANCE OR PENETRATION MAY NOT MATCH OBJECT ELEVATION MINUS SURFACE ELEVATION DUE TO ROUNDING.
6. OBJECTS WITH A NEGATIVE NUMBER (-) ARE BELOW OR CLEAR OF THE RUNWAY SURFACE AND OBJECTS WITH A POSITIVE NUMBER (+) ARE ABOVE OR PENETRATE OF THE RUNWAY SURFACE.
7. OBJECTS WITH N/A ARE LOCATED OUTSIDE THE LIMITS OF THE APPLICABLE RUNWAY SURFACE.
8. EXISTING AND FUTURE ROAD ELEVATIONS ARE TRAVERSE WAY ELEVATION PLUS TRAVERSE WAY ADJUSTMENTS (23' FOR RAILWAYS, 17' FOR INTERSTATE HIGHWAYS, 15' FOR OTHER PUBLIC ROADS, OR 10' FOR PRIVATE ROADS).
9. ITS RECOMMENDED TO TRIM/REMOVE ALL TREES THAT PENETRATE OR ARE WITHIN 15 FEET OF THE PART 77 APPROACH SURFACE THAT ARE UNDER AIRPORT CONTROL (ON-AIRPORT PROPERTY OR EXISTING EASEMENT).

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AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE: AUGUST 2024
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DESIGN BY: JA
DRAWN BY: JA
REVIEWED BY: SZ

SHEET TITLE

DEPARTURE SURFACE OBSTRUCTION DATA - RW 12L, 12R, 30L AND 30R

AUG 06, 2024 5:23 PM ALEXA02176
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RUNWAY 22 OBSTRUCTION DATA TABLE

OBJECT DATA			EXISTING 40:1 TERPS DEPARTURE SURFACE (SURFACE 7)		FUTURE 40:1 TERPS DEPARTURE SURFACE (SURFACE 7)		PROPOSED DISPOSITION (PHASE)
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
5864	POLE	58	83	-25	65	-7	NO ACTION
5865	POLE	50	83	-34	65	-16	NO ACTION
5866	POLE	58	88	-29	70	-11	NO ACTION
5867	POLE	54	89	-35	76	-23	NO ACTION
5868	POLE	54	91	-37	73	-18	NO ACTION
5869	POLE	61	93	-32	75	-14	NO ACTION
5870	POLE	55	96	-41	78	-22	NO ACTION
5871	POLE	55	99	-43	81	-25	NO ACTION
5872	POLE	56	101	-45	83	-27	NO ACTION
5873	POLE	60	103	-44	85	-26	NO ACTION
5874	POLE	55	106	-50	88	-32	NO ACTION
5875	POLE	56	108	-53	90	-34	NO ACTION
5876	POLE	81	107	-26	89	-7	NO ACTION
5877	POLE	56	103	-48	85	-30	NO ACTION
5878	POLE	49	104	-54	86	-36	NO ACTION
5879	POLE	65	101	-35	83	-17	NO ACTION
5880	POLE	39	101	-62	83	-44	NO ACTION
5881	POLE	52	101	-49	83	-31	NO ACTION
5882	POLE	60	98	-38	80	-20	NO ACTION
5883	POLE	51	98	-47	80	-29	NO ACTION
5884	POLE	75	102	-27	84	-9	NO ACTION
5885	POLE	59	95	-36	77	-17	NO ACTION
5886	POLE	50	95	-45	77	-27	NO ACTION
5887	POLE	58	92	-34	74	-16	NO ACTION
5888	POLE	51	92	-41	74	-23	NO ACTION
5889	POLE	67	97	-30	79	-12	NO ACTION
5890	POLE	62	89	-27	71	-9	NO ACTION
5891	POLE	52	89	-37	71	-19	NO ACTION
5892	POLE	63	93	-30	74	-12	NO ACTION
5893	POLE	61	86	-25	68	-7	NO ACTION
5894	POLE	51	86	-35	68	-17	NO ACTION
98438	REIL	21	21	0	21	0	FIXED BY FUNCTION
98446	REIL	21	21	0	21	0	FIXED BY FUNCTION
100852	TREE	47	53	-6	51	-5	TRIM/REMOVE
100860	TREE	57	57	0	105	-48	TRIM/REMOVE
101404	TREE	63	68	-5	50	13	TRIM/REMOVE
101420	TREE	62	69	-6	50	12	TRIM/REMOVE
101428	TREE	69	71	-2	53	16	TRIM/REMOVE
101452	TREE	66	72	-7	54	11	TRIM/REMOVE
101468	TREE	70	75	-5	57	13	TRIM/REMOVE
101492	TREE	69	74	-5	55	13	TRIM/REMOVE
101772	TREE	44	53	-9	53	-9	TRIM/REMOVE
101820	TREE	47	55	-9	37	9	TRIM/REMOVE
101828	TREE	47	56	-9	38	9	TRIM/REMOVE
101836	TREE	52	56	-4	38	14	TRIM/REMOVE
101844	TREE	47	56	-10	38	9	TRIM/REMOVE
101916	TREE	60	66	-6	48	12	TRIM/REMOVE
101924	TREE	63	66	-3	48	15	TRIM/REMOVE
102348	TREE	100	100	0	82	18	TRIM/REMOVE
102356	TREE	105	101	4	83	23	TRIM/REMOVE
102364	TREE	103	101	2	83	20	TRIM/REMOVE
103874	TREE	76	68	8	79	-3	TRIM/REMOVE
121943	TREE	55	56	-1	100	-45	TRIM/REMOVE
121967	TREE	58	58	0	106	-48	TRIM/REMOVE
121975	TREE	50	54	-4	100	-50	TRIM/REMOVE
121983	TREE	54	54	-1	95	-42	TRIM/REMOVE
125671	TREE	67	68	-1	95	-28	TRIM/REMOVE
125687	TREE	69	69	0	94	-25	TRIM/REMOVE
125695	TREE	69	69	1	89	-20	TRIM/REMOVE
125759	TREE	44	52	-9	58	-14	TRIM/REMOVE
125767	TREE	45	53	-8	56	-12	TRIM/REMOVE
125775	TREE	46	53	-7	62	-16	TRIM/REMOVE
125783	TREE	43	53	-9	65	-21	TRIM/REMOVE
125791	TREE	43	53	-10	74	-30	TRIM/REMOVE
125799	TREE	43	53	-9	49	-6	TRIM/REMOVE
125807	TREE	45	53	-8	47	-2	TRIM/REMOVE
125815	TREE	44	53	-9	43	1	TRIM/REMOVE
125823	TREE	43	53	-9	46	-2	TRIM/REMOVE
125831	TREE	47	53	-6	35	12	TRIM/REMOVE
125839	TREE	44	53	-9	46	-2	TRIM/REMOVE
125847	TREE	46	53	-7	94	-48	TRIM/REMOVE
125855	TREE	44	53	-8	98	-54	TRIM/REMOVE
125863	TREE	45	54	-9	96	-51	TRIM/REMOVE
125871	TREE	45	54	-9	90	-45	TRIM/REMOVE
125879	TREE	45	54	-9	85	-40	TRIM/REMOVE
125887	TREE	52	60	-8	58	-6	TRIM/REMOVE
125895	TREE	54	59	-6	59	-5	TRIM/REMOVE
125903	TREE	61	60	2	78	-16	TRIM/REMOVE
125911	TREE	47	56	-9	93	-46	TRIM/REMOVE
125919	TREE	47	56	-9	85	-39	TRIM/REMOVE
125927	TREE	47	56	-9	80	-32	TRIM/REMOVE
125935	TREE	46	55	-9	80	-34	TRIM/REMOVE
125943	TREE	65	67	-2	88	-23	TRIM/REMOVE
125951	TREE	70	68	2	84	-14	TRIM/REMOVE
125959	TREE	63	68	-5	93	-30	TRIM/REMOVE
125967	TREE	67	69	-2	87	-20	TRIM/REMOVE
125975	TREE	68	70	-2	93	-25	TRIM/REMOVE
125983	TREE	66	69	-3	51	15	TRIM/REMOVE
125991	TREE	65	70	-5	51	13	TRIM/REMOVE
125999	TREE	62	69	-7	51	11	TRIM/REMOVE
126007	TREE	43	53	-10	88	-45	TRIM/REMOVE
126015	TREE	46	55	-9	65	-18	TRIM/REMOVE
126023	TREE	80	84	-4	66	14	TRIM/REMOVE

RUNWAY 4 OBSTRUCTION DATA TABLE

OBJECT DATA			EXISTING AND FUTURE		PROPOSED DISPOSITION (PHASE)
			40:1 TERPS DEPARTURE SURFACE (SURFACE 7)		
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
96308	TREE	95	95	0	TRIM/REMOVE
96404	TREE	76	76	0	TRIM/REMOVE
96412	TREE	81	80	1	TRIM/REMOVE
96548	TREE	80	82	-2	MONITOR
96556	TREE	78	81	-3	MONITOR
96596	TREE	76	78	-2	MONITOR
96660	TREE	78	82	-4	MONITOR
96684	TREE	74	79	-5	MONITOR
96692	TREE	75	78	-3	MONITOR
96700	TREE	75	77	-2	MONITOR
96708	TREE	71	77	-6	MONITOR
96764	TREE	72	75	-2	MONITOR
96772	TREE	75	75	0	MONITOR
96796	TREE	61	60	2	TRIM/REMOVE
96804	TREE	65	60	5	TRIM/REMOVE
96812	TREE	66	58	8	TRIM/REMOVE
96820	TREE	61	58	3	TRIM/REMOVE
97192	TREE	63	55	7	TRIM/REMOVE
97200	TREE	66	52	14	TRIM/REMOVE
97312	TREE	74	67	7	TRIM/REMOVE
98510	TREE	53	60	-7	TRIM/REMOVE
98518	TREE	59	62	-3	TRIM/REMOVE
98542	TREE	65	64	1	TRIM/REMOVE
98566	TREE	69	67	2	TRIM/REMOVE
98574	TREE	66	65	0	TRIM/REMOVE
98582	TREE	67	63	3	TRIM/REMOVE
98686	TREE	64	62	2	TRIM/REMOVE
98694	TREE	58	62	-4	TRIM/REMOVE
98702	TREE	68	61	7	TRIM/REMOVE
98710	TREE	69	61	9	TRIM/REMOVE
98718	TREE	62	61	2	TRIM/REMOVE
98726	TREE	58	60	-2	TRIM/REMOVE
98734	TREE	58	58	0	TRIM/REMOVE
98758	TREE	82	86	-5	MONITOR
98790	TREE	84	88	-3	MONITOR
98798	TREE	85	88	-3	MONITOR
99158	TREE	78	78	0	MONITOR
99198	POLE	66	68	-2	NO ACTION
99214	POLE	58	63	-5	NO ACTION
99254	POLE	62	69	-6	NO ACTION
99270	POLE	65	65	0	NO ACTION
99286	TRAFFIC SIGNAL	62	67	-5	NO ACTION
99310	POLE	62	62	0	NO ACTION
99318	POLE	63	59	4	LIGHT/MARK
99438	TREE	73	78	-5	MONITOR
121375	TREE	48	48	0	TRIM/REMOVE
121383	TREE	45	45	0	TRIM/REMOVE
121391	TREE	60	60	0	TRIM/REMOVE
121399	TREE	59	59	0	TRIM/REMOVE
121407	TREE	62	62	0	TRIM/REMOVE

RUNWAY 4 OBSTRUCTION DATA TABLE

OBJECT DATA			EXISTING AND FUTURE		PROPOSED DISPOSITION (PHASE)
			40:1 TERPS DEPARTURE SURFACE (SURFACE 7)		
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
121415	TREE	59	53	6	TRIM/REMOVE
121423	TREE	44	53	-9	TRIM/REMOVE
121431	TREE	49	54	-5	TRIM/REMOVE
121439	TREE	51	54	-4	TRIM/REMOVE
121447	TREE	58	55	4	TRIM/REMOVE
121455	TREE	48	54	-6	TRIM/REMOVE
121463	TREE	47	55	-8	TRIM/REMOVE
121471	TREE	51	55	-3	TRIM/REMOVE
121479	TREE	49	54	-5	TRIM/REMOVE
121487	TREE	50	50	0	TRIM/REMOVE
121495	TREE	45	45	0	TRIM/REMOVE
121503	TREE	49	55	-6	TRIM/REMOVE
121511	TREE	48	55	-8	TRIM/REMOVE
121519	TREE	49	56	-7	TRIM/REMOVE
121527	TREE	47	56	-9	TRIM/REMOVE
121535	TREE	48	56	-8	TRIM/REMOVE
121543	TREE	46	56	-9	TRIM/REMOVE
121551	TREE	55	57	-2	TRIM/REMOVE
121559	TREE	57	57	0	TRIM/REMOVE
121567	TREE	58	58	0	TRIM/REMOVE
121575	TREE	62	58	4	TRIM/REMOVE
121583	TREE	60	59	1	TRIM/REMOVE
121591	TREE	55	59	-3	TRIM/REMOVE
121599	TREE	50	59	-9	TRIM/REMOVE
121607	TREE	54	60	-6	TRIM/REMOVE
121615	TREE	54	59	-5	TRIM/REMOVE
121623	TREE	51	60	-9	MONITOR
121631	TREE	51	59	-8	TRIM/REMOVE
121639	TREE	56	60	-4	TRIM/REMOVE
121647	TREE	52	59	-8	TRIM/REMOVE
121655	TREE	58	59	-2	TRIM/REMOVE
121663	TREE	57	60	-3	TRIM/REMOVE
121671	TREE	58	57	2	TRIM/REMOVE
121679	TREE	59	56	3	TRIM/REMOVE
121687	TREE	48	56	-8	TRIM/REMOVE
121695	TREE	48	55	-7	TRIM/REMOVE
121703	TREE	49	54	-5	TRIM/REMOVE
121711	TREE	50	54	-4	TRIM/REMOVE
121719	TREE	47	54	-7	TRIM/REMOVE
121727	TREE	45	53	-8	TRIM/REMOVE
121735	TREE	53	53	0	TRIM/REMOVE
121743	TREE	59	62	-3	MONITOR
121751	TREE	67	67	1	TRIM/REMOVE
121759	TREE	68	68	1	TRIM/REMOVE
121767	TREE	70	76	-6	MONITOR
121775	TREE	72	77	-5	MONITOR
121783	TREE	76	78	-1	MONITOR
121791	TREE	69	75	-6	MONITOR
121799	TREE	69	75	-6	MONITOR
121807	TREE	70	75	-5	MONITOR
121815	TREE	72	76	-5	MONITOR
121823	TREE	75	78	-3	MONITOR
129377	TREE	53	58	-6	TRIM/REMOVE
130743	TREE	76	78	-3	MONITOR
RD4-1	EX ROAD	39	-	-	NO ACTION
RD4-2	EX ROAD	38	-	-	NO ACTION
RD4-3	EX ROAD	38	-	-	NO ACTION

NOTES:

1. SELECTED OBJECTS FOR THE OBSTRUCTION ANALYSIS ARE OBJECTS THAT ARE LOCATED WITHIN THE PART 77 APPROACH SURFACE BOUNDARY. THEN, OBJECTS ARE FURTHER ANALYZED AS CLEARANCE OR PENETRATION ACCORDING TO THE SURFACES APPLIED TO RUNWAY END.
2. REFER TO SHEET 28 FOR RUNWAYS 12R, 30L, 12L AND 30R OBSTRUCTION DATA TABLES.
3. REFER TO PLAN AND PROFILES ON SHEET 26 FOR DEPARTURE SURFACE OBSTRUCTIONS.
4. OBSTRUCTION SURVEY COMPLETED IN MAY 2023 AND COMPLIES TO FAA AC 150/5300-18B.
5. CLEARANCE OR PENETRATION MAY NOT MATCH OBJECT ELEVATION MINUS SURFACE ELEVATION DUE TO ROUNDING.
6. OBJECTS WITH A NEGATIVE NUMBER (-) ARE BELOW OR CLEAR OF THE RUNWAY SURFACE AND OBJECTS WITH A POSITIVE NUMBER (+) ARE ABOVE OR PENETRATE OF THE RUNWAY SURFACE.
7. OBJECTS WITH N/A ARE LOCATED OUTSIDE THE LIMITS OF THE APPLICABLE RUNWAY SURFACE.
8. EXISTING AND FUTURE ROAD ELEVATIONS ARE TRAVERSE WAY ELEVATION PLUS TRAVERSE WAY ADJUSTMENTS (23' FOR RAILWAYS, 17' FOR INTERSTATE HIGHWAYS, 15' FOR OTHER PUBLIC ROADS, OR 10' FOR PRIVATE ROADS).
9. ITS RECOMMENDED TO TRIM/REMOVE ALL TREES THAT PENETRATE OR ARE WITHIN 15 FEET OF THE PART 77 APPROACH SURFACE THAT ARE UNDER AIRPORT CONTROL (ON-AIRPORT PROPERTY OR EXISTING EASEMENT).

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AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	28-29_DS_OBS DATA TABLES.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

DEPARTURE SURFACE OBSTRUCTION DATA - RW 4 AND 22

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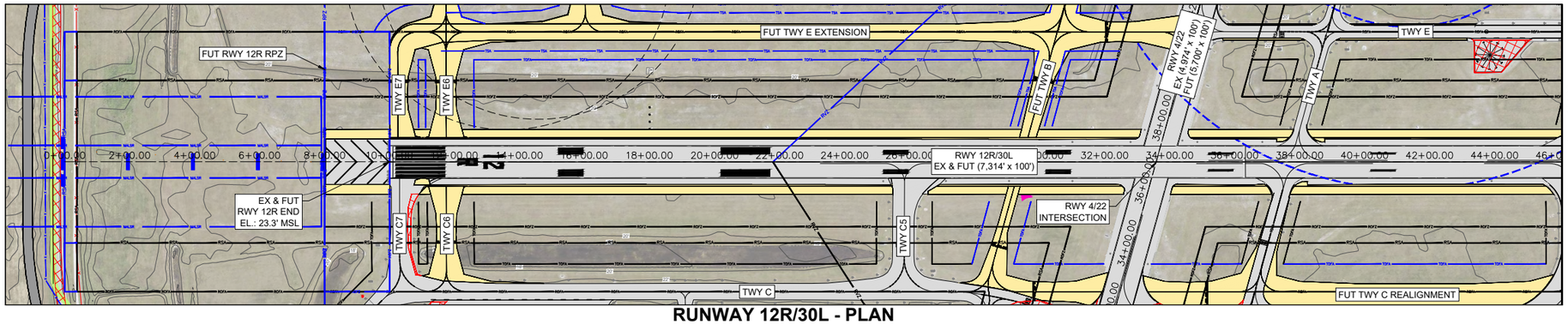
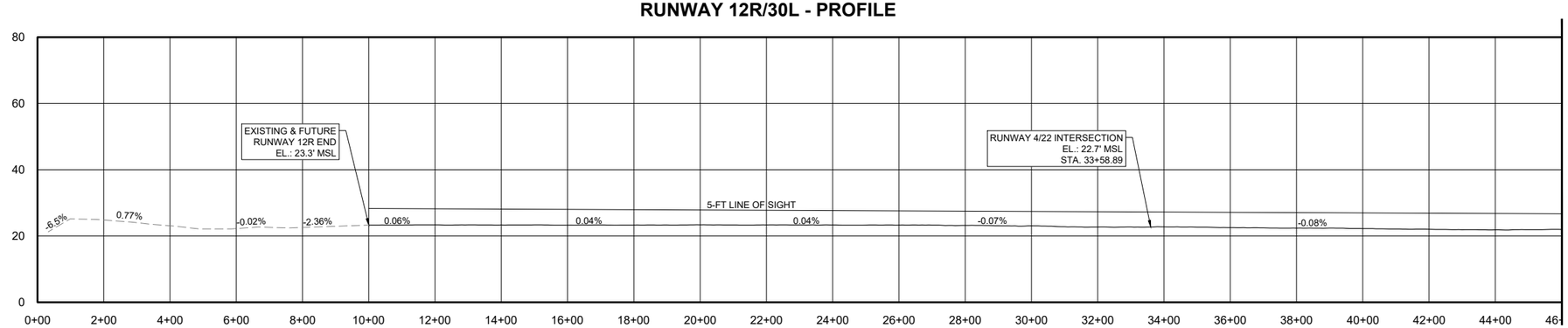


RUNWAY 12R/30L - PLAN



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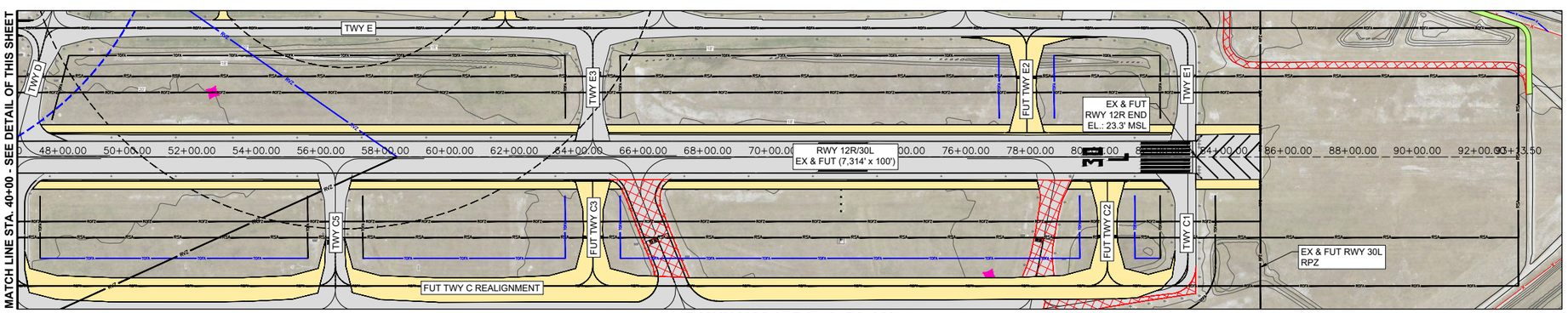
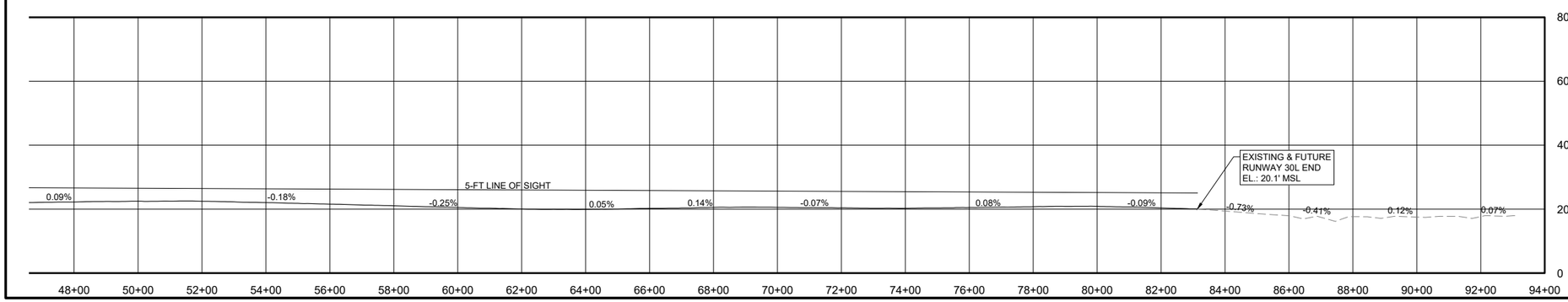
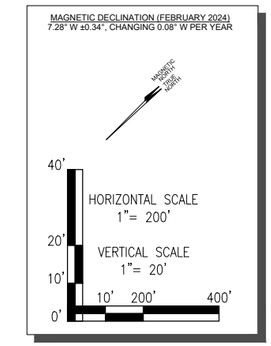


RUNWAY 12R/30L PLAN



RUNWAY 12R/30L PROFILE



REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.
4. RUNWAY CENTERLINE DATA COMPLETED BY NV5 GEOSPATIAL IN MAY 2023.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. THERE ARE NO OFZ PENETRATIONS OTHER THAN FRANGIBLE NAVAIDS.
3. GROUND CONTOUR INTERVALS ARE 2-FOOT ON AIRPORT GENERATED FROM QUANTUM DIGITAL TERRAIN MODEL (DTM). OFF AIRPORT 5-FOOT CONTOURS FROM NV5 GEOSPATIAL AND STATE LIDAR DATA.
4. NO RSA OR ROFA PENETRATIONS.

EXISTING	FUTURE	LEGEND
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
		ROADS
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
		PRECISION APPROACH PATH INDICATOR (PAPI)
		RWY END IDENTIFIER LIGHTS (REIL)
		WIND CONE
		AWOS PROTECTION AREA
		RWY PROTECTION ZONE (RPZ)
		RWY SAFETY AREA (RSA)
		RWY OBJECT FREE AREA (ROFA)
		RWY OBJECT FREE ZONE (ROFZ)

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AIRPORT LAYOUT PLAN
DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	30-32_RUNWAY PROFILES.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

RUNWAY 12R-30L
CENTERLINE PROFILE

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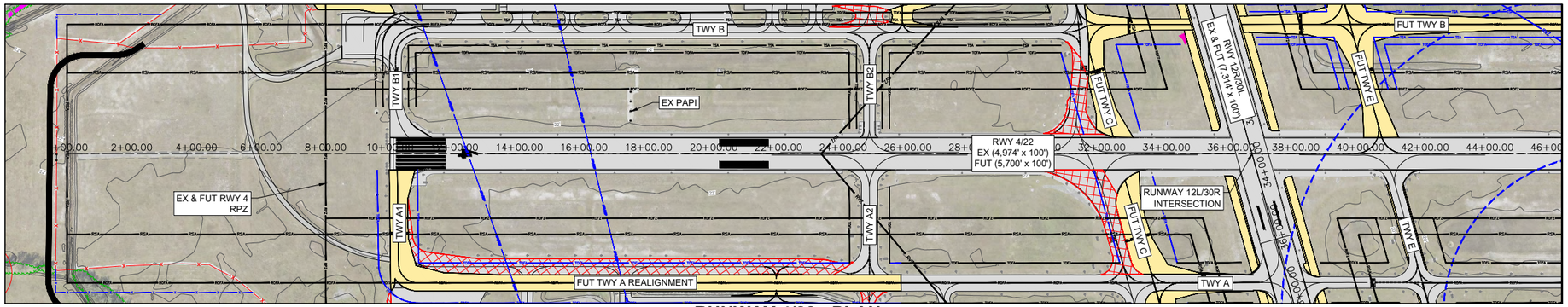

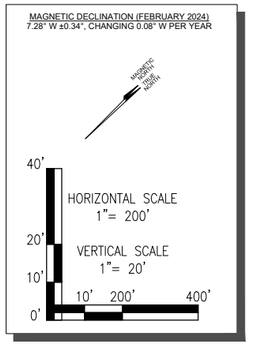

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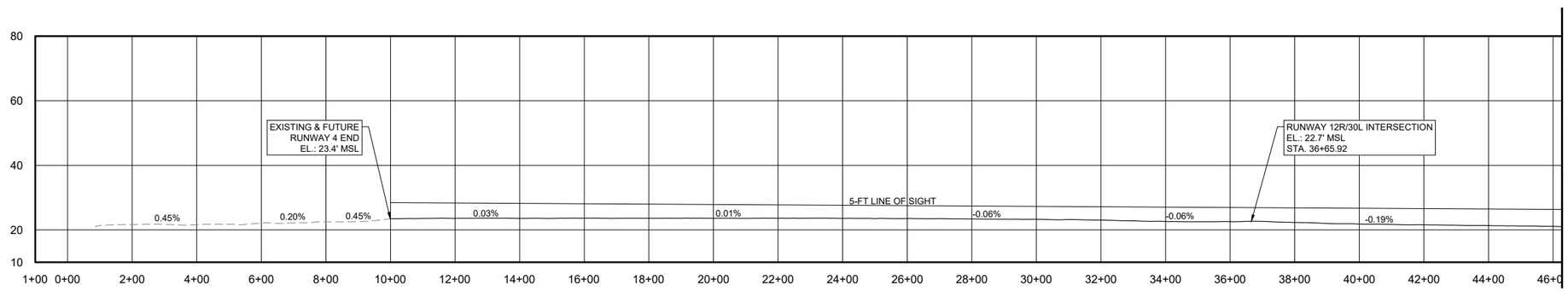
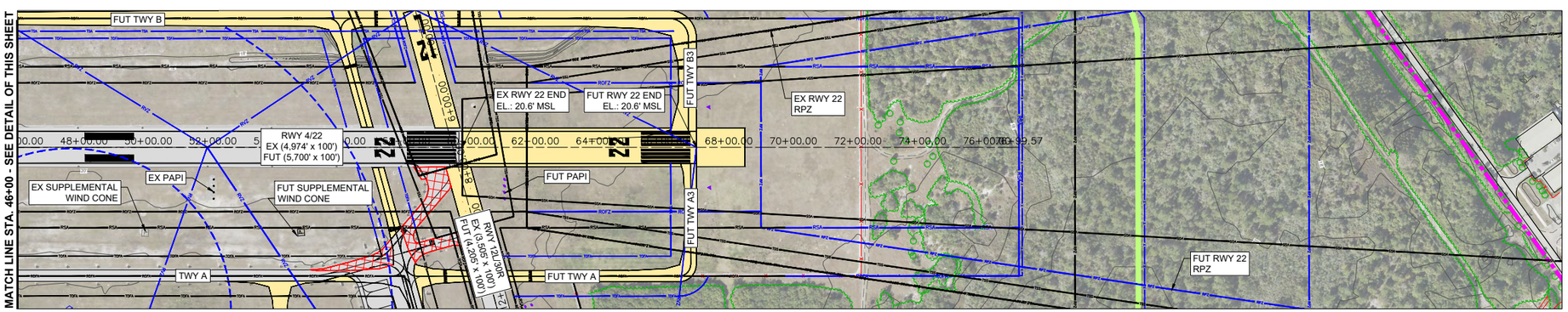
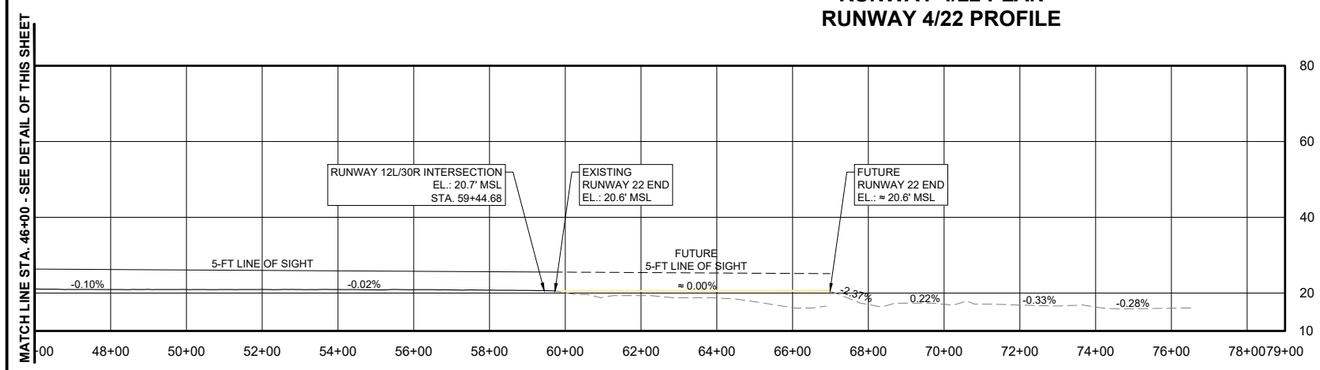
RUNWAY 4/22 - PROFILE





RUNWAY 4/22 PLAN
RUNWAY 4/22 PROFILE



REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.
4. RUNWAY CENTERLINE DATA COMPLETED BY NV5 GEOSPATIAL IN MAY 2023.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. THERE ARE NO OFZ PENETRATIONS OTHER THAN FRANGIBLE NAVAIDS.
3. GROUND CONTOUR INTERVALS ARE 2-FOOT ON AIRPORT GENERATED FROM QUANTUM DIGITAL TERRAIN MODEL (DTM). OFF AIRPORT 5-FOOT CONTOURS FROM NV5 GEOSPATIAL AND STATE LIDAR DATA.
4. NO RSA OR ROFA PENETRATIONS.

EXISTING	FUTURE	LEGEND
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
		ROADS
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
		PRECISION APPROACH PATH INDICATOR (PAPI)
		RWY END IDENTIFIER LIGHTS (REIL)
		WIND CONE
		AWOS PROTECTION AREA
		RWY PROTECTION ZONE (RPZ)
		RWY SAFETY AREA (RSA)
		RWY OBJECT FREE AREA (ROFA)
		RWY OBJECT FREE ZONE (ROFZ)

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REGIONAL AIRPORT

VERO BEACH REGIONAL AIRPORT
3400 CHEROKEE DRIVE
VERO BEACH, FL 32960
PHONE (772) 978-4930

VERO BEACH
REGIONAL AIRPORT
(VRB)

AIRPORT LAYOUT PLAN
DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	30-32_RUNWAY PROFILES.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

RUNWAY 4-22
CENTERLINE PROFILE

AUG 06, 2024 5:25 PM ALEXA02176
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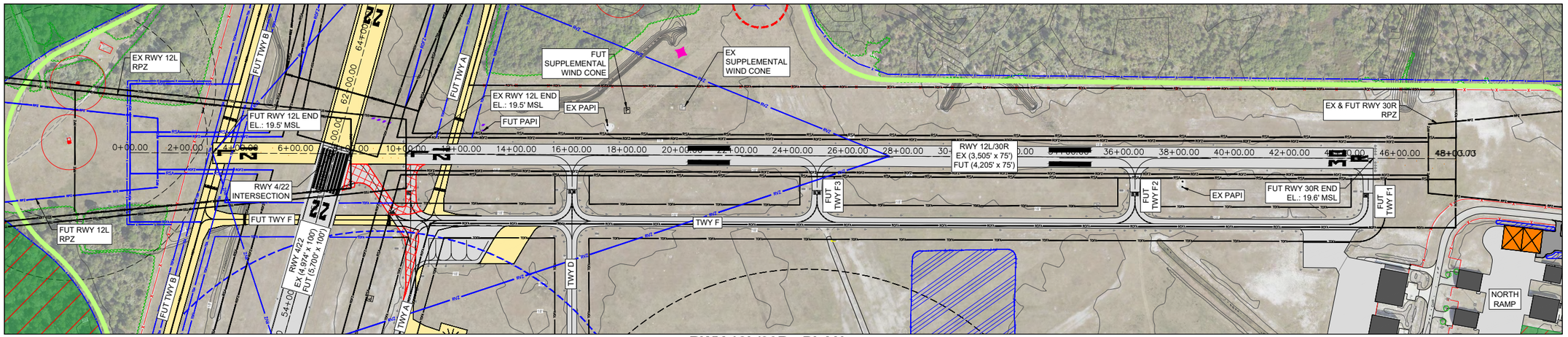
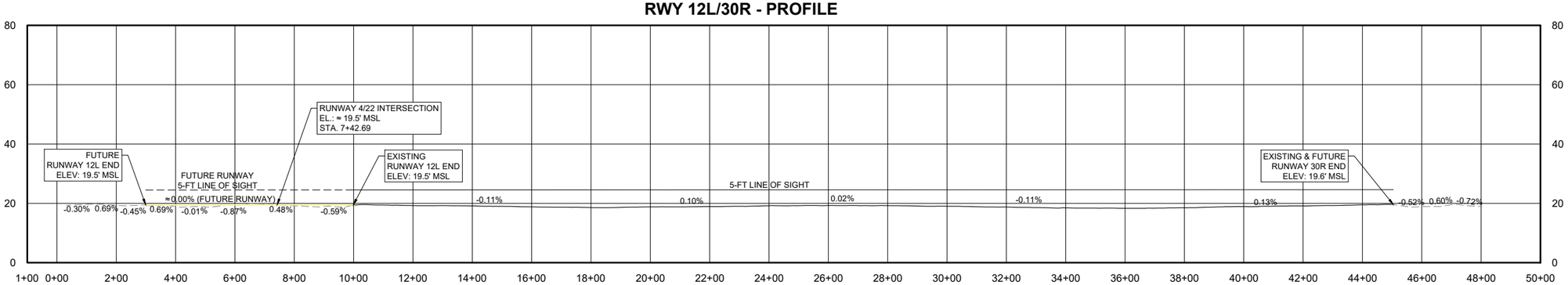


RWY 12L/30R - PLAN
RWY 12L/30R - PROFILE



REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.
4. RUNWAY CENTERLINE DATA COMPLETED BY NV5 GEOSPATIAL IN MAY 2023.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. THERE ARE NO OFZ PENETRATIONS OTHER THAN FRANGIBLE NAVAIDS.
3. GROUND CONTOUR INTERVALS ARE 2-FOOT ON AIRPORT GENERATED FROM QUANTUM DIGITAL TERRAIN MODEL (DTM), OFF AIRPORT 5-FOOT CONTOURS FROM NV5 GEOSPATIAL AND STATE LIDAR DATA.
4. NO RSA OR ROFA PENETRATIONS.

EXISTING	FUTURE	LEGEND
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
		ROADS
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
		PRECISION APPROACH PATH INDICATOR (PAPI)
		RWY END IDENTIFIER LIGHTS (REIL)
		WIND CONE
		AWOS PROTECTION AREA
RPZ	RPZ	RWY PROTECTION ZONE (RPZ)
RSA	RSA	RWY SAFETY AREA (RSA)
ROFA	ROFA	RWY OBJECT FREE AREA (ROFA)
ROFZ	ROFZ	RWY OBJECT FREE ZONE (ROFZ)

MAGNETIC DECLINATION (FEBRUARY 2024)
7.28° W ±0.34°, CHANGING 0.08° W PER YEAR

MAGNETIC NORTH / GRID NORTH

HORIZONTAL SCALE 1"= 200'
VERTICAL SCALE 1"= 20'
40' 20' 10' 0' 10' 200' 400'

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VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

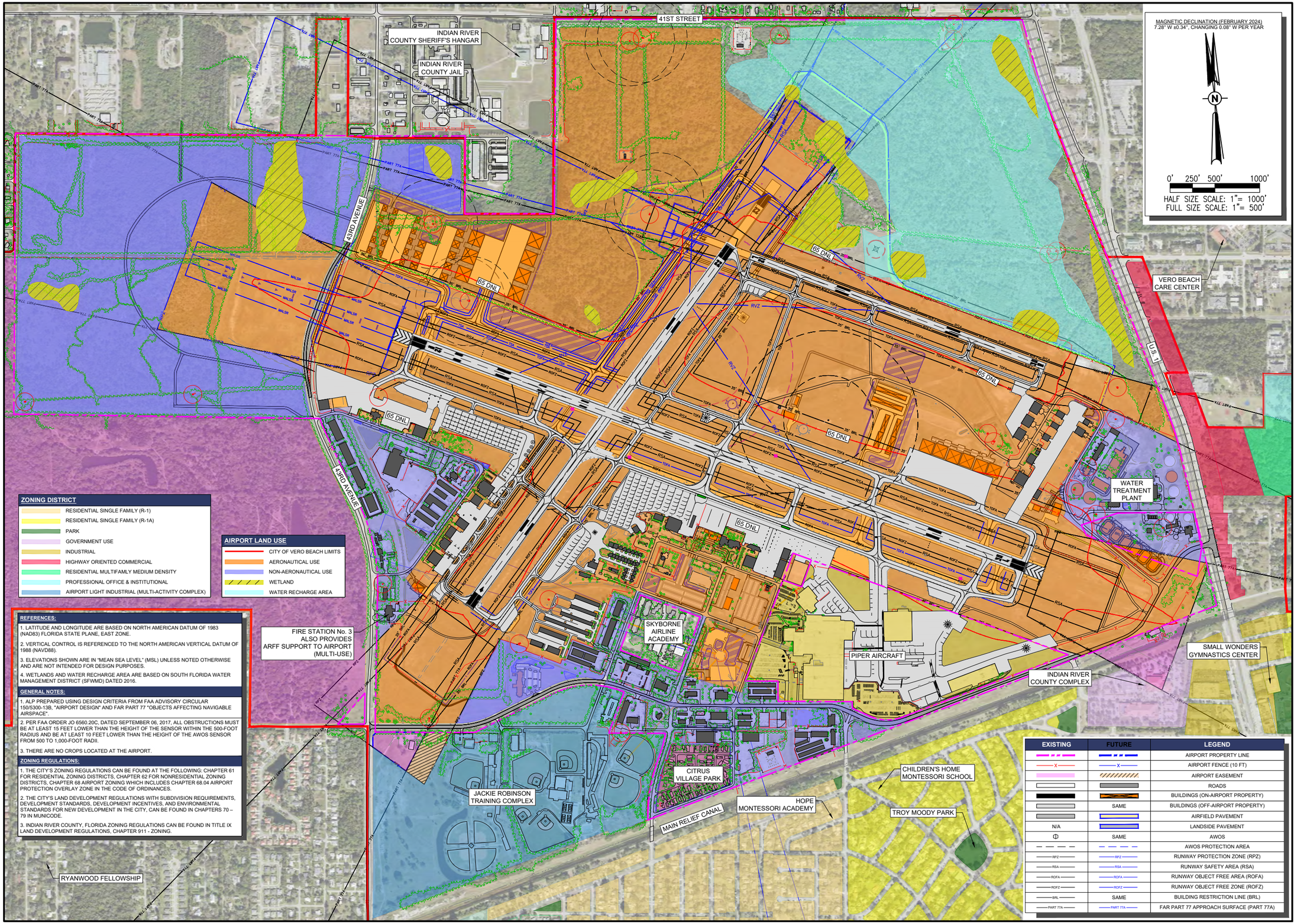
DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	30-32_RUNWAY PROFILES.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

RUNWAY 12L-30R CENTERLINE PROFILE

AUG 06, 2024 5:26 PM ALEXA02176
I:\2DJOBS\20A0069W01\CAD\AIRPORT\SHEET\ALP\30-32_RUNWAY PROFILES.DWG



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VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	33_LAND USE.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

AIRPORT LAND USE PLAN

AUG 06, 2024 5:27 PM ALEXA02176
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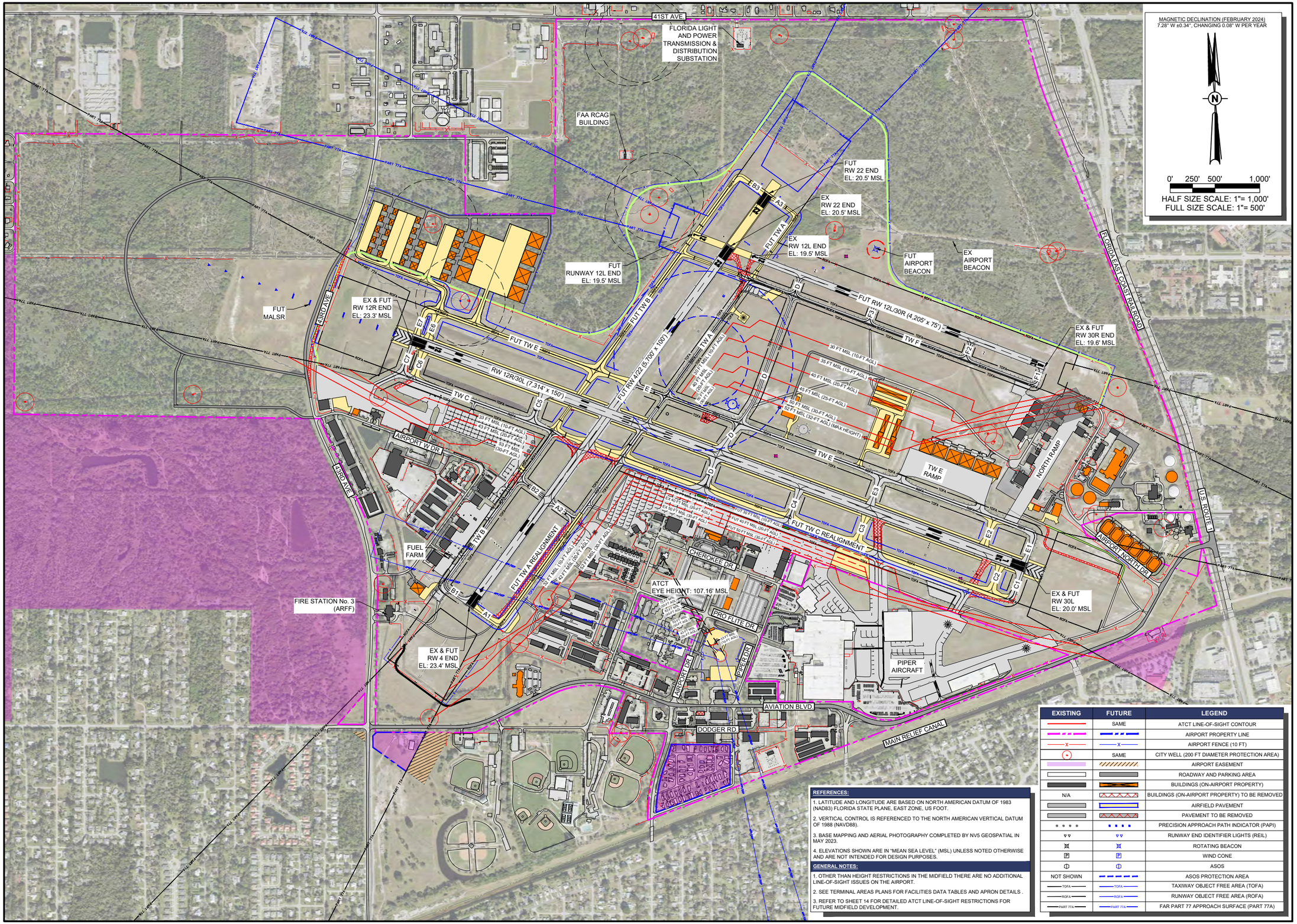

REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE, US FOOT.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. BASE MAPPING AND AERIAL PHOTOGRAPHY COMPLETED BY NV5 GEOSPATIAL IN MAY 2023.
4. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTES:

1. OTHER THAN HEIGHT RESTRICTIONS IN THE MIDFIELD THERE ARE NO ADDITIONAL LINE-OF-SIGHT ISSUES ON THE AIRPORT.
2. SEE TERMINAL AREAS PLANS FOR FACILITIES DATA TABLES AND APRON DETAILS .
3. REFER TO SHEET 14 FOR DETAILED ATCT LINE-OF-SIGHT RESTRICTIONS FOR FUTURE MIDFIELD DEVELOPMENT.

EXISTING	FUTURE	LEGEND
	SAME	ATCT LINE-OF-SIGHT CONTOUR
		AIRPORT PROPERTY LINE
		AIRPORT FENCE (10 FT)
	SAME	CITY WELL (200 FT DIAMETER PROTECTION AREA)
		AIRPORT EASEMENT
		ROADWAY AND PARKING AREA
		BUILDINGS (ON-AIRPORT PROPERTY)
N/A		BUILDINGS (ON-AIRPORT PROPERTY) TO BE REMOVED
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
		PRECISION APPROACH PATH INDICATOR (PAPI)
		RUNWAY END IDENTIFIER LIGHTS (REIL)
		ROTATING BEACON
		WIND CONE
		ASOS
NOT SHOWN		ASOS PROTECTION AREA
TOFA	TOFA	TAXIWAY OBJECT FREE AREA (TOFA)
ROFA	ROFA	RUNWAY OBJECT FREE AREA (ROFA)
PART 77A	PART 77A	FAR PART 77 APPROACH SURFACE (PART 77A)

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VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	34_ATCT LINE-OF-SIGHT.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

ATCT LINE-OF-SIGHT DRAWING

AUG 09, 2024 2:35 PM ALEXA02176
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APPENDIX I: EXHIBIT 'A' AIRPORT PROPERTY MAP

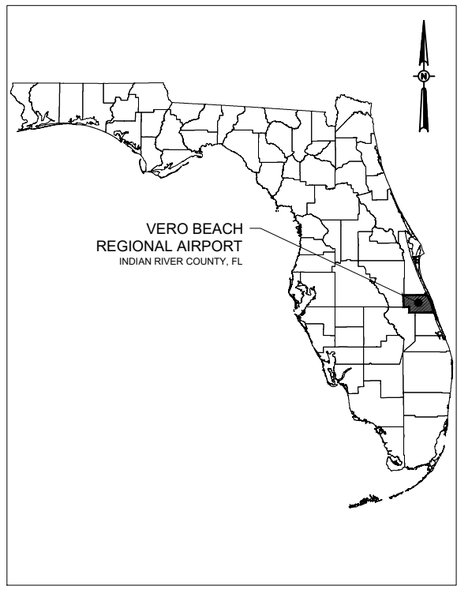
EXHIBIT 'A' AIRPORT PROPERTY MAP

FOR

VERO BEACH REGIONAL AIRPORT (VRB)

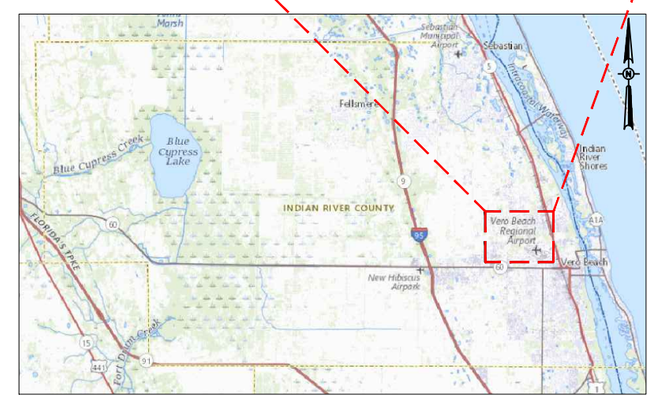
VERO BEACH, INDIAN RIVER COUNTY, FLORIDA

AUGUST 2024



INDEX OF SHEETS		
SHEET NUMBER	SHEET TITLE	REVISIONS
1	COVER SHEET	
2	EXHIBIT 'A' AIRPORT PROPERTY MAP	
3	EXHIBIT 'A' AIRPORT PROPERTY MAP PARCEL DATA (SHEET 1 OF 3)	
4	EXHIBIT 'A' AIRPORT PROPERTY MAP PARCEL DATA (SHEET 2 OF 3)	
5	EXHIBIT 'A' AIRPORT PROPERTY MAP PARCEL DATA (SHEET 3 OF 3)	

VICINITY MAP



LOCATION MAP

"In accepting and utilizing any drawings, reports and data on any form of electronic media generated and furnished by Hanson, the Recipient agrees that all such electronic files are instruments of service of Hanson, who shall be deemed the author, and shall retain all common law, statutory law, and other rights, including copyrights. Upon receipt, the electronic files shall be deemed to be accepted, and Hanson shall not have any obligation to correct errors, make changes or maintain electronic files.

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No.	Issue/Description	Date	By

FLORIDA DEPARTMENT OF TRANSPORTATION - OFFICE OF AVIATION
DISTRICT 4
3400 W. COMMERCIAL BLVD.
FT. LAUDERDALE, FL 33309
(954) 777-4130

Name — Date
Title

VERO BEACH REGIONAL AIRPORT

VERO BEACH REGIONAL AIRPORT
3400 CHEROKEE DRIVE
VERO BEACH, FLORIDA 32960
(772) 978-4930

Todd Scher — Date
Airport Director

Plans Prepared By:
This Exhibit 'A' Airport Property Map was prepared for the Vero Beach Regional Airport according to the applicable Advisory Circulars and the current version of FAA Standard Operating Procedure 3.0 Exhibit 'A' Review Checklist, and accurately depicts the airspace at the time of submittal. The ALP conforms with FAA design standards, except as noted.

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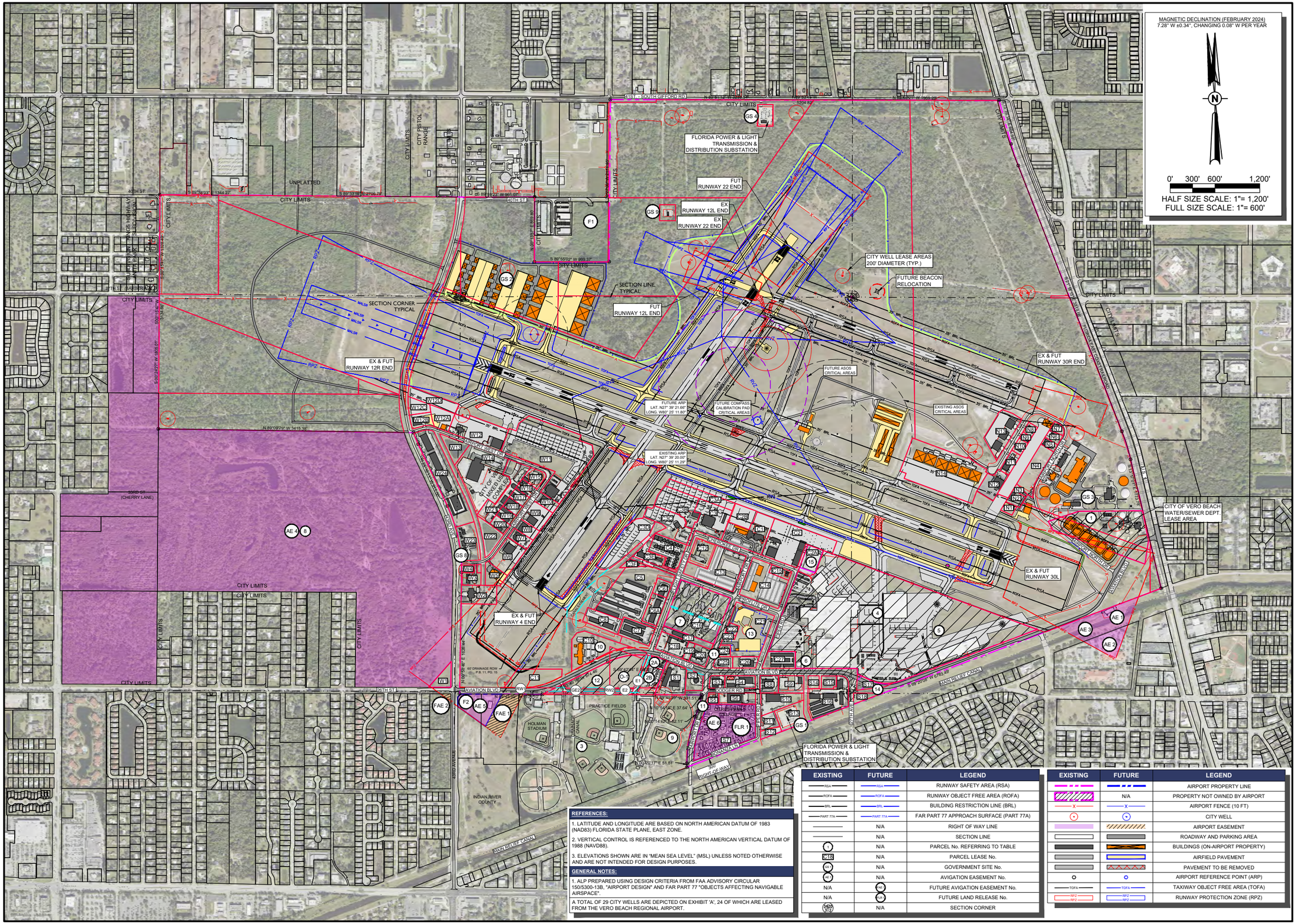
August 2024

Susan Zellers, P.E., AAE, ENV SP — Date
Senior Project Manager


MAGNETIC DECLINATION (FEBRUARY 2024)
7.28° W ±0.34', CHANGING 0.08' W PER YEAR
0' 300' 600' 1,200'
HALF SIZE SCALE: 1"= 1,200'
FULL SIZE SCALE: 1"= 600'
FLORIDA POWER & LIGHT TRANSMISSION & DISTRIBUTION SUBSTATION
FUT RUNWAY 22 END
EX RUNWAY 12L END
EX RUNWAY 22 END
CITY WELL LEASE AREAS 200' DIAMETER (TYP.)
FUTURE BEACON RELOCATION
SECTION LINE, TYPICAL
FUT RUNWAY 12L END
SECTION CORNER TYPICAL
EX & FUT RUNWAY 12R END
EX & FUT RUNWAY 30R END
FUTURE ASOS CRITICAL AREAS
FUTURE ARP LAT. N27° 39' 21.68" LONG. W80° 25' 11.80"
FUTURE COMPASS CALIBRATION PAD CRITICAL AREAS
EXISTING ASOS CRITICAL AREAS
EXISTING ARP LAT. N27° 39' 20.09" LONG. W80° 25' 11.20"
CITY OF VERO BEACH WATER/SEWER DEPT. LEASE AREA
EX & FUT RUNWAY 30L
EX & FUT RUNWAY 4 END
FLORIDA POWER & LIGHT TRANSMISSION & DISTRIBUTION SUBSTATION
200' RIGHT-OF-WAY
CITY LIMITS
UNPLATTED
INDIAN RIVER COUNTY
PRACTICE FIELDS
HOLMAN STADIUM
MAIN ROBERT CANAL
AVIATION BLVD
DODGER RD
AIRPORT ROAD
26TH ST
43RD AVE
20TH ST
17TH ST (CHERRY LANE)
53RD ST (CHERRY LANE)
SOUTH GIFFORD RD
SR 60 (OSLO ROAD)
SR 5 (US HIGHWAY 1)
SR 505 (OLD DIXIE HIGHWAY)
SR 510 (ROUTE 510)
SR 607 (OLD DIXIE HIGHWAY)
SR 614 (ROUTE 614)
SR 615 (ROUTE 615)
SR 616 (ROUTE 616)
SR 617 (ROUTE 617)
SR 618 (ROUTE 618)
SR 619 (ROUTE 619)
SR 620 (ROUTE 620)
SR 621 (ROUTE 621)
SR 622 (ROUTE 622)
SR 623 (ROUTE 623)
SR

SUMMARY OF EXISTING AIRPORT OWNED LAND

PARCEL NUMBER	PARCEL DESIGNATION	OWNER	ACQUIRED FROM (GRANTOR)	TOTAL AREA (ACRES)	FAA PARTICIPATION (ACRES)	NON-FAA PARTICIPATION (ACRES)	FAA PROJECT NUMBER	DATE ACQUIRED	PROPERTY INTEREST ACQUIRED	CONVEYANCE INSTRUMENT	RECORD DOCUMENT NUMBER (BOOK/PAGE)	REMARKS
OVERALL		CITY OF VERO BEACH	UNITED STATES OF AMERICA	2135.6 (2130.99)	-	2135.6	-	OCTOBER 3, 1947	FEE	QUIT CLAIM	8/ 383 - DOC 41872	SURPLUS PROPERTY RELEASED OCTOBER 3, 1947, S&E 4.61 ACRES AND THE N 200' of 2 PIECES
OVERALL		CITY OF VERO BEACH	UNITED STATES OF AMERICA	IMPROVEMENTS/PROVISIONS	-	-	-	MAY 10, 1948	FEE	SUPPLEMENTAL QUIT CLAIM	51/171	SUPPLEMENTAL QUIT CLAIM DEED-BUILDING-IMPROVEMENTS-PROVISIONS
O-1		CITY OF VERO BEACH	UNITED STATES OF AMERICA	4.61	-	4.61	-	JANUARY 8, 1963	FEE	QUIT CLAIM	166/396-DOC 20597	RELEASED THE 4.61 ACRE TRACT THAT WAS S&E IN 1947 RELEASE. BECAME A PART OF OVERALL PROPERTY. NOW A PART OF PARCELS 10 AND 12.
10	32392600011017000000.0	CITY OF VERO BEACH	LOS ANGELES DODGERS, INC	4.65	-	4.65	-	AUGUST 28, 1990	FEE	WARRANTY DEED	875/1425	PART OF FAA RELEASE FEBRUARY 1, 1965 OR 210/541. PART OF LAND SWAP FROM DODGERS TO CITY. FAA AGREEMENT REQUIRING ACQUISITION IN EXCHANGE FOR RELEASE OF PARCEL 9 SEPTMBER 20, 1990 OR 875/2415
13	32392600011005000000.0	CITY OF VERO BEACH	PIPER AIRCRAFT, INC.	8.7	-	8.7	-	AUGUST 30, 1993	FEE	WARRANTY DEED	989/2727	FAA RELEASE 212/402. PIPER SOLD TO LOS ANGLES DODGERS AUGUST 23, 1991 907/2778. CITY OBTAINED FROM LOS ANGLES DODGERS AS PART OF A LAND SWAP.
14	32392600011001000000.0	CITY OF VERO BEACH	PIPER AIRCRAFT, INC.	1.04	-	1.04	-	JULY 16, 1993	FEE	SPECIAL WARRANTY DEED	981/807	PART OF RELEASE FOR SALE TO PIPER (PARCEL 4) OR 201/464

SUMMARY OF AIRPORT RELEASED LAND

PARCEL ID	PARCEL DESIGNATION	GRANTEE	GRANTOR	TOTAL AREA (ACRES)	DATE SOLD	RELEASE DATE	RELEASE RECORD DOCUMENT NUBMER (BOOK/PAGE)	ORIGINAL SALE DOCUMENT	ORIGINAL SALE RECORD DOCUMENT (BOOK/PAGE)	REMARKS
1	32392600011074000000.0	CITY OF VERO BEACH (NONAIRPORT)	UNITED STATES OF AMERICA	13.59	-	MAY 5, 1953	80/401	-	-	REQUIRES EASEMENTOVER PARCEL FOR RIGHT OF FLIGHT
2A	32392600011031000000.0	LOS ANGELES DODGERS, INC.	CITY OF VERO BEACH	0.69	MARCH 2, 1965	FEBRUARY 1, 1965	210/541	SPECIAL WARANTY DEED	210/531	CURRENT OWNER STAR SUITE BY RIVERSIDE THEATRE, LLC. LAND SWAPPED TO CITY OF VERO BEACH BY LOS ANGLES DODGERS INC. AUGUST 28, 1990 875/1425
2B	32392600011031000000.0	LOS ANGELES DODGERS, INC.	CITY OF VERO BEACH	1.37	MARCH 2, 1965	FEBRUARY 1, 1965	210/541	SPECIAL WARANTY DEED	210/531	CURRENT OWNER STAR SUITE BY RIVERSIDE THEATRE, LLC.
3	32392600011023000000.0	DODGERTOWN, INC.	CITY OF VERO BEACH	94.70 & 2.37 & 13.33	MARCH 2, 1965	FEBRUARY 1, 1965	210/541	SPECIAL WARANTY DEED	210/531	CURRENT OWNER INDIANA RIVER COUNTY
		DODGERTOWN, INC.	CITY OF VERO BEACH	94.70 & 2.37 & 13.33	MARCH 1, 1965	-	-	OPTION	210/535	OPTION OF BUY WITH T&Cs. RESOLUTION 1558 AND 1572. OFFER TO SELL LAND RECORDED 210/579 AND 210/582
		CITY OF VERO BEACH	LOS ANGELES DODGERS, INC	97.9 & 2.4 & 8.77 & 3.4		-	-	TERMINATION OF LEASE	210/574	97.9(NE CORNER OF MAIN CANAL & 43RD AVE), REC BUILDING, FIELD 2 & FIELD 3
		LOS ANGELES DODGERS, INC.	CITY OF VERO BEACH		NOVEMBER 2, 1964			ORDINANCE 970	210/546	VACATES PORTION OF AVENUE C, IN PARCEL 3
4	32393400004.0	PIPER AIRCRAFT, INC.	CITY OF VERO BEACH	77.35 & 4 ESMTS	SEPTEMBER 28, 1964	SEPTEMBER 4, 1964	201/279 AND 212/382	SPECIAL WARANTY DEED	201/464	97.9(NE CORNER OF MAIN CANAL & 43RD AVE), REC BUILDING, FIELD 2 & FIELD 3
5	32393400004.0	PIPER AIRCRAFT, INC.	CITY OF VERO BEACH	12.26 (8.28 AFTER S&E)	SEPTEMBER 28, 1964	SEPTEMBER 4, 1964	201/279 AND 212/382	SPECIAL WARANTY DEED	201/470	HAS A S&E FOR AVENUE A ROW (WHICH IS INCLUDED IN THE 12.26)
4 AND 5		PIPER AIRCRAFT CORPORATION	CITY OF VERO BEACH	77.35 & 12.26	-	-	OFFER TO SELL	OPTION	201/479	OPTION TO BUY WITH T&C
6	32393400004.0	PIPER AIRCRAFT, INC.	CITY OF VERO BEACH	0.925	NOVEMBER 2, 1965	OCTOBER 14, 1965	219/164	SPECIAL WARRANTY DEED	219/201	SALE TO PIPER
7	32392600011010000000.0	FLIGHT SAFETY INTERNATIONAL	CITY OF VERO BEACH	10.71	MAY 18, 1971	MARCH 11, 1966	224/68	SPECIAL WARRANTY DEED	387/117	SUBJECT TO EASEMENTS AND RIGHT OF FLIGHT. CURRENT OWNER VERO BEACH FLIGHT TRAINING ACADEMY, INC.
8	32392600011049000000.0	LOS ANGELES DODGERS, INC.	CITY OF VERO BEACH	221.7	JANUARY 17, 1967	NA	NA	SPECIAL WARRANTY DEED	247/92	SALE OF 221.7 ACRES RESERVING 2 DRAINAGE EASEMENTS, INCLUDES RIGHT OF FLIGHT EASEMENT, NOT PART OF NAVAL STATION SURPLUS PROPERTY. CURRENT OWNER SUNFIELD HOMES INC.
9	32392600011023000000.0	LOS ANGELES DODGERS, INC.	CITY OF VERO BEACH	13.36	AUGUST 28, 1990	SEPTEMBER 14, 1990	875/2408	SPECIAL WARRANTY DEED	875/1423	PART OF A LAND SWAP BETWEEN CITYOF VERO BEACH AND LOS ANGELES DODGERS, INC. CURRENT OWNER INDIANA RIVER COUNTY
11	RIGHT-OF-WAY	DEDICATED TO PUBLIC	CITY OF VERO BEACH	8.73	JUNE 29, 2018	NOVEMBER 16, 2016	3081/1823	PLAT	13/64	8.73 AC ALONG 27TH AVE., PLAT 13/64
	RIGHT-OF-WAY	DEDICATED TO PUBLIC	CITY OF VERO BEACH	2.58	JUNE 29, 2018	NOVEMBER 16, 2016	3081/1823	PLAT	29/92	2.58 AC ALONG AIRPORT DRIVE, PLAT 13/64
		DEDICATED TO PUBLIC	CITY OF VERO BEACH	8.73	JUNE 6, 1991				13/64-64A-MAP	PORTIONS OF 27TH AVE, AVIATION BLV & AIRPORT DRIVE DEDICATED TO PUBLIC
12	32392600011021000000.0	LOS ANGELES DODGERS, INC.	CITY OF VERO BEACH	6.85	JUNE 1993	FEBRUARY 1, 1965	210/541	WARRANTY DEED	989/2717	SWAPPED FROM LOS ANGELES DODGERS TO CITY OF VERO BEACH AUGUST 28, 1990 OR 875/1425. CURRENT OWNER VBMING, LLC
15	32393400004000000000.0	SUN AVIATION	PIPER AIRCRAFT, INC.	1.9	SEPTEMBER 28, 1964	SEPTEMBER 4, 1964	201/279 AND 212/382	SPECIAL WARANTY DEED	201/464	ORIGINALLY PART OF PIPER AIRCRAFT, INC. PARCEL ID #4. SALE TO SUN AVIATION OR 1173/1616
RW1		PUBLIC	CITY OF VERO BEACH	43rd AVENUE	MARCH 19, 1968			DEDICATION MAP	7/85	DEDICATION OF 43rd AVENUE ROW TO THE PUBLIC (FROM WALKER AVE TO S. GIFFORD ROAD)
RW2		LOS ANGELES DODGERS, INC.	CITY OF VERO BEACH	2.47 OF 26TH STREET	FEBRUARY 3, 1993			ORDINANCE	1054/610	ABANDONING PORTION OF 26TH, WEST OF FLIGHT SAFETY LYING SOUTH OF AVIATION BOULEVARD, BUT RETAINING 2 UTILITY EASEMENTS

SUMMARY OF EXISTING AIRPORT GRANTED EASEMENTS

PARCEL ID	PARCEL DESIGNATION	OWNER	ACQUIRED FROM (GRANTOR)	TOTAL AREA (ACRES)	ACREAGE ACQUIRED (ACRES)	FAA PARTICIPATION (ACRES)	NON-FAA PARTICIPATION (ACRES)	FAA PROJECT NUMBER	DATE ACQUIRED	PROPERTY INTEREST ACQUIRED	RECORD DOCUMENT NUMBER (BOOK/PAGE)	REMARKS
GE1		DODGERTOWN, INC.	CITY OF VERO BEACH	APPROX 1,013 SQ FT				MARCH 3, 1965	MARCH 3, 1965	EASEMENT DEED	210/544	RELEASED AND QUIT CLAIMED EASEMENT TO DODGERTOWN, INC. FOR SWIMMING POOL DRAINAGE
GE2		CITY OF VERO BEACH	CITY OF VERO BEACH (AIRPORT)						FEBRUARY 3, 1993	ORDINANCE	1054/610	UTILITY AND STORMWATER EASEMENTS

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VERO BEACH REGIONAL AIRPORT

VERO BEACH REGIONAL AIRPORT
3400 CHEROKEE DRIVE
VERO BEACH, FL 32960
PHONE (772) 978-4930

VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	35-37_PROPERTY MAP.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

EXHIBIT 'A' AIRPORT PROPERTY MAP PARCEL DATA (SHEET 1 OF 3)

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SUMMARY OF EXISTING AIRPORT OWNED EASEMENTS

PARCEL ID	PARCEL DESIGNATION	OWNER	ACQUIRED FROM (GRANTOR)	TOTAL AREA (ACRES)	ACREAGE ACQUIRED (ACRES)	FAA PARTICIPATION (ACRES)	NON-FAA PARTICIPATION (ACRES)	FAA PROJECT NUMBER	DATE ACQUIRED	PROPERTY INTEREST ACQUIRED	RECORD DOCUMENT NUMBER (BOOK/PAGE)	REMARKS
AE 1 AE 2 AE 3	MAIN RELIEF CANAL RIGHT-OF-WAY AND CITY PROPERTY	CITY OF VERO BEACH (AIRPORT)	CITY OF VERO BEACH		8.60		4.30		MARCH 30, 1995	AVIGATION	1056/425	
AE 4	3239260001104900002.0	CITY OF VERO BEACH (AIRPORT)	SANDLER AT PINCECREST LLC	336.73	336.73		336.73		FEBURARY 2, 2006	AVIGATION	2149/1117	CURRENT OWNER SUNFIELD HOMES, INC.
AE 5	3239260001102300001.2 3239260001102300001.3	CITY OF VERO BEACH (AIRPORT)	INDIAN RIVER COUNTY	10.38 6.12	1.64 1.99		1.64 1.99		APRIL 16, 2019	AVIGATION	3200/827	POTENTIAL FUTURE LAND ACQUISITION
AE 6	3239260001026000001.0	CITY OF VERO BEACH (AIRPORT)	CITY OF VERO BEACH	10.27	10.27		10.27	2024-EG-303	FEBRUARY 13, 2024	AVIGATION	3679/939	EASEMENT GRANT IN PREPARATION FOR SALE OF PROPERTY
1	3239260001107400000.0	CITY OF VERO BEACH (AIRPORT)	CITY OF VERO BEACH	13.59	13.59		13.59		MAY 5, 1953	RIGHT OF FLIGHT	80/401	INCLUDED IN RELEASE
E1		CITY OF VERO BEACH	DODGERTOWN, INC	NO ACREAGE STATED					MARCH 1, 1965	EASEMENT DEED	210/561	15' WIDE EASEMENT FOR SANITARY LINE-NO ACREAGE STATED
E2		CITY OF VERO BEACH	DODGERTOWN, INC	NO ACREAGE STATED					MARCH 1, 1965	EASEMENT DEED	210/572	15' WIDE EASEMENT FOR WATERLINE-NO ACREAGE STATED
3		CITY OF VERO BEACH	DODGERTOWN, INC	94.70 & 2.37 & 13.33			94.70 & 2.37 & 13.33		MARCH 2, 1965	RIGHT OF FLIGHT	210/531	RIGHT OF FLIGHT OVER RELEASED PARCELS. CURRENTY OWNER INDIANA RIVER COUNTY.
4		CITY OF VERO BEACH	PIPER AIRCRAFT	77.35 & 12.26	77.35 & 12.26		77.35 & 12.26		SEPTMBER 28, 1964	RIGHT OF FLIGHT	201/464	RIGHT OF FLIGHT OVER RELEASED PARCELS
7		CITY OF VERO BEACH	FLIGHT SAFETY INC.	10.71	10.71		10.71		MAY 18, 1071	RIGHT OF FLIGHT	387-117	RIGHT OF FLIGHT OVER RELEASED PARCEL

SUMMARY OF FUTURE AIRPORT RELEASE LAND

PARCEL ID	PARCEL DESIGNATION	FUTURE OWNER	ACQUIRE FROM (GRANTOR)	TOTAL AREA (ACRES)	DATE SOLD	RELEASE DATE	RELEASE RECORD DOCUMENT NUBMER (BOOK/PAGE)	SALE RECORD DOCUMENT (BOOK/PAGE)	REMARKS
FLR 1	3239260001026000001.0	CITY OF VERO BEACH (CITY)	CITY OF VERO BEACH (AIRPORT)	10.27	-	-	-	-	FUTURE LAND RELEASE. AIRPORT RETAINS EASEMENT AFTER RELEASE. REFER TO FUTURE EASEMENT TABLE FOR ADDITIONAL INFORMATION.

SUMMARY OF FUTURE AIRPORT OWNED EASEMENTS

PARCEL ID	PARCEL DESIGNATION	OWNER	ACQUIRED FROM (GRANTOR)	TOTAL AREA (ACRES)	ACREAGE ACQUIRED (ACRES)	FAA PARTICIPATION (ACRES)	NON-FAA PARTICIPATION (ACRES)	FAA PROJECT NUMBER	DATE ACQUIRED	PROPERTY INTEREST ACQUIRED	RECORD DOCUMENT NUMBER (BOOK/PAGE)	REMARKS
FAE 1	3239260001102300001.2 3239260001102300001.0	INDIAN RIVER COUNTY	-	10.38 60.62	3.16 0.06	-	-	-	-	-	-	AT LEAST AN EASEMENT, POTENTIALLY FEE
FAE 2	33390400001	INDIAN RIVER FARMS COMPANY S/D	-	3.05	0.16	-	-	-	-	-	-	AT LEAST AN EASEMENT, POTENTIALLY FEE

SUMMARY OF FUTURE AIRPORT OWNED LAND

PARCEL ID	PARCEL DESIGNATION	OWNER	ACQUIRED FROM (GRANTOR)	TOTAL AREA (ACRES)	FAA PARTICIPATION (ACRES)	NON-FAA PARTICIPATION (ACRES)	FAA PROJECT NUMBER	DATE ACQUIRED	PROPERTY INTEREST ACQUIRED	CONVEYANCE INSTRUMENT	RECORD DOCUMENT NUMBER (BOOK/PAGE)	REMARKS
F1	3239260001102300001.2 3239260001102300001.3	INDIAN RIVER COUNTY	-	10.38 6.12	-	-	-	-	-	-	-	EXISTING AVIGATION EASEMENT. POTENTIAL FUTURE LAND ACQUISITION

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VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
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DRAWN BY:	JA
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SHEET TITLE

EXHIBIT 'A' AIRPORT PROPERTY MAP PARCEL DATA (SHEET 2 OF 3)

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SUMMARY OF EXISTING LEASE PARCELS - CENTRAL

PARCEL ID (ON DRAWING)	2016 EXHIBIT 'A' PARCEL ID	PROP ID	PARCEL DESIGNATION	PARCEL LEASEE	REMARKS
C1	TERMINAL	50547	32392600011007000001.0	CAPAN, INC.	
C2	C7A & C7B	50548	32392600011007000001.1	SUN AVIATION, INC.	
C2A	-	53986	32393400004000000002.0	SUN AVIATION, INC.	
C2B	C7D	50549	32392600011007000001.4	SUN AVIATION, INC.	
C3	C15	50550	32392600011007000001.5	SKYBORNE AIRLINE ACADEMY, INC.	
C3A	C15	50551	32392600011007000001.6	SKYBORNE AIRLINE ACADEMY, INC.	
C3B	C15	50568	32392600011016000001.2	SKYBORNE AIRLINE ACADEMY, INC.	
C3C	C15	50567	32392600011016000001.1	SKYBORNE AIRLINE ACADEMY, INC.	
C3D	C15	50570	32392600011016000001.5	SKYBORNE AIRLINE ACADEMY, INC.	
C3E	C16B	50565	32392600011015000001.0	SKYBORNE AIRLINE ACADEMY, INC.	
C3F	C14F	50563	32392600011014000001.2	SKYBORNE AIRLINE ACADEMY, INC.	
C4	C16	50566	32392600011016000001.0	VRB HANGARS, INC	
C5	C14A	50561	32392600011014000001.0	CITY OF VERO BEACH	
C6	C14E	50562	32392600011014000001.1	VERO AIRPORT BUSINESS CENTER, LLC.	
C6A	C14C	50564	32392600011014000001.3	VERO AIRPORT BUSINESS CENTER, LLC.	
C7	C14D	50560	32392600011013000001.1	TREASURE COAST STORAGE, LLC.	
C8	C14A	50559	32392600011013000001.0	CITY OF VERO BEACH	
C10	C17	50571	32392600011017000001.0	CITY OF VERO BEACH	
C11	C19	50572	32392600011019000001.0	CITY OF VERO BEACH	
C12	FAA CONTROL TOWER	50552	32392600011008000001.0	FEDERAL AVIATION ADMINISTRATION	
C13	C8 & C9	50553	32392600011008000001.1	CITY OF VERO BEACH	
C14	C6	50545	32392600011006000001.0	CITY OF VERO BEACH	
C15	C6A	50546	32392600011006000001.1	SUN AVIATION, INC.	
C16	FLIGHT SAFETY INC.	50554	32392600011010000001.0	VERO BEACH FLIGHT TRAINING ACADEMY, INC.	
C17	C11C	50555	32392600011010000001.1	SKYBORNE AIRLINE ACADEMY, INC.	
C18	C12	50558	32392600011012000001.0	LANGFITT, DAVID R. JR.	
C19	C11A	50557	32392600011011000001.1	LANGFITT FAMILY PARTNERSHIP	
C20	C11B	50556	32392600011011000001.0	TWO RIDGES, LLC.	
C21	C5	50541	32392600011005000001.0	CITY OF VERO BEACH	
C22	-	50542	32392600011005000001.1	CITY OF VERO BEACH	
C23	-	50543	32392600011005000001.2	CITY OF VERO BEACH	
C24	C5A	50544	32392600011005000001.3	PROPERTY LIFE, LLC.	
C25	C4A	50540	32392600011004000001.1	RMC HOLDINGS GROUP, LLC.	
C26	C4B-C	50539	32392600011004000001.0	CITY OF VERO BEACH	
C27	C3	50538	32392600011003000001.0	TREASURE COAST STORAGE, LLC.	

SUMMARY OF EXISTING LEASE PARCELS - WEST

PARCEL ID (ON DRAWING)	2016 EXHIBIT 'A' PARCEL ID	PROP ID	PARCEL DESIGNATION	PARCEL LEASEE	REMARKS
W1	C21	50617	32392600011049000001.0	CITY OF VERO BEACH	
W2	W42	50616	32392600011048000001.1	IRC EMERGENCY SVCS DIST	
W3	W1	53972	32393400003000000001.0	HYBRID SOURCES, INC.	
W4	-	53968	32393400003000000000.1	CITY OF VERO BEACH	
W5	W2	138626	32393400005000000002.1	DYER PARTNERS III, LLC.	
W6	W3 & W4	53987	32393400005000000002.0	CONTINENTAL JET AVIATION, INC.	
W7	W3 & W4	53988	32393400005000000005.0	CORPORATE AIR, INC.	
W8	W5	53989	32393400005000000006.0	H W BARNHOUSE, INC.	
W9	W7 & W8	53990	32393400005000000007.0	CORPORATE AIR, INC.	
W10	W9	53991	32393400005000000009.0	DESIGN HOMES, INC.	
W11	W10, W11, W12,W13.W14 & W15	53992	32393400005000000010.0	PARIS AIR, INC.	
W12	W16, W17, W18, W19 & W20	53973	32393400003000000016.0	CORPORATE AIR, INC.	
W12A	W21	53974	32393400003000000021.0	CORPORATE AIR, INC.	
W12B	W23	53976	32393400003000000023.0	CORPORATE AIR, INC.	
W12C	W22	53975	32393400003000000022.0	CORPORATE AIR, INC.	
W12D	-	138859	32392600011000000000.4	CORPORATE AIR, INC.	
W13	-	53971	32393400003000000000.4	CITY OF VERO BEACH	
W14	W43	53970	32393400003000000000.3	GIRARD EQUIMENT, INC.	
W15	W41	53984	32393400003000000041.0	CITY OF VERO BEACH	
W16	W40	53983	32393400003000000040.0	CITY OF VERO BEACH	
W17	W39	53982	32393400003000000039.0	CITY OF VERO BEACH	
W18	W38	53981	32393400003000000038.0	CITY OF VERO BEACH	
W19	W37	53980	32393400003000000037.0	CITY OF VERO BEACH	
W20	W36	53979	32393400003000000036.0	CITY OF VERO BEACH	
W21	-	134552	32393400003000000000.5	CITY OF VERO BEACH	
W22	-	53969	32393400003000000000.2	CITY OF VERO BEACH	
W23	W33, W34 & W35	53978	32393400003000000033.0	SUNCOAST PRIMARY SCHOOL	
W24	W24, W25, W26, W27, W28, W29, W30, W31, W32	53977	32393400003000000024.0	43RD AVE TRADE CENTER	

SUMMARY OF EXISTING LEASE PARCELS - SOUTH

PARCEL ID (ON DRAWING)	2016 EXHIBIT 'A' PARCEL ID	PROP ID	PARCEL DESIGNATION	PARCEL LEASEE	REMARKS
S1	C32	50592	32392600011032000001.0	DRAGONFLY BOATWORKS, LLC.	
S2	C33	50593	32392600011033000001.0	ITHINK FINANCIAL CREDIT UNION	
S3	C34 C35	50594	32392600011034000001.0	AIRPORT DR STATION, INC.	
S4	C36-C39	50595	32392600011036000001.0	ZION OPTO, INC.	
S5	C30	50586	32392600011030000001.0	FERRELLGAS L P	
S6	C28 & C29	50585	32392600011028000001.0	WALKING TREE BREWERY	
S7	C27	-	CITRUS PARK VILLAGE MHP	CITRUS PARK VILLAGE MHP	
S8	C40	50596	32392600011040000001.0	BRIDGETON REAL FUND I LP	
S9	C41	50597	32392600011041000001.0	COMPLETE MARINE SERV	
S10	C46	50604	32392600011044000004.0	BEACON SALES ACQUISITION, INC.	
S11	C45A	50603	32392600011044000003.0	BEACON SALES ACQUISITION, INC.	
S12	C45A	140223	32392600011044000003.1	SOUTHERN ATLANTIC SUPPLY DIV CORP	
S13	C45	50600	32392600011044000001.0	FLORIDA POWER & LIGHT COMPANY	
S14	C42	50598	32392600011042000001.0	CITY OF VERO BEACH	
S15	C43 & C43A	50599	32392600011043000001.0	CITY OF VERO BEACH	
S16	C44	50602	32392600011044000002.0	VERO AIRPORT TRADE CENTER	
S17	-	50537	32392600011001000001.2	CITY OF VERO BEACH	
S18	-	50601	32392600011044000001.1	CITY OF VERO BEACH	

SUMMARY OF EXISTING LEASE PARCELS - NORTH

PARCEL ID (ON DRAWING)	2016 EXHIBIT 'A' PARCEL ID	PROP ID	PARCEL DESIGNATION	PARCEL LEASEE	REMARKS
N1	N12	50605	32392600011045000001.0	CITY OF VERO BEACH	
N2	N12	132340	32392600011045000002.0	HARBOR HANGAR 700, LLC.	
N3	N12	50605	32392600011045000001.0	CITY OF VERO BEACH	
N4	N6-N9	50608	32392600011045000001.6	CITY OF VERO BEACH	
N5	N6-N9	137658	32392600011045000002.1	RIGHT FLAT, LLC.	
N6	N6-N9	50610	32392600011045000001.8	HOLDEN, THOMAS J.	
N7	N6-N9	131643	32392600011045000001.9	CITY OF VERO BEACH	
N8	N11	50615	32392600011047000001.3	MIBEC AIR, LLC.	
N9	N5	50614	32392600011047000001.2	HANGAR 5 VENTURES, INC.	
N10	N4	50613	32392600011047000001.1	SOODSMA, THOMAS N.	
N11	N3	50612	32392600011047000001.0	CORPORATE AIR, INC.	
N12	N2	50611	32392600011046000001.0	DAVIS DEVELOPMENT, INC.	
N13	-	135282	32392600011074000001.1	JP AVIATION INVESTMENTS, LLC.	
N14	-	137679	32392600011000000000.3	CORPORATE AIR, INC.	

SUMMARY OF AIRPORT GOVERNMENT SITES

SITE ID	RESOLUTION No	REFERENCE	PARCEL ID
GS 1	2007-38	SUB-STATION #5	PARCELS #S11, S12 & S13 - ELECTRIC SUB-STATION EAST OF CITRUS PARK VILLAGE
GS 2	2011-19	STRIPPING TOWER AND 27 WATER WELLS	WELLFIELDS - STRIPPING TOWER - 27 WELLS
GS 3	2011-20 (REPEALING 89-11)	WATER TREATMENT PLANT (25.14 AC)	WATER TREAMENT PLANT. APRIL 20, 1989 FAA CONSENT TO NONAVIATION USE ON ORIGINAL RESOLUTION.
GS 4	2669	"OLD" NORTH ELECTRICAL SUB-STATION	NORTH ELECTRIC SUB-STATION
GS 5	2881	SUB-STATION #6	S.GIFFORD ROAD ELECTRIC SUBSTATION
GS 6	82-9	T&D FACILITY	TRACT "C" - LESS THE EAST 90 FEET ACCORDING TO PLAT OF APW
GS 7	89-23	APW 36-41 & 90' TRACT C	LOTS 36-41 PLUS EASTERLY 90 ' TRACT C APW
GS 8	91-09	43RD AVE & AIRPORT WEST DRIVE	43RD AVE & AIRPORT WEST DR AND WESTERLY 1/2 OF TRACT A
GS 9	N/A	FAA RCAG FACILITY	FAA REMOTE COMMUNICATIONS AIR/GROUND FACILITY

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VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	35-37_PROPERTY MAP.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

EXHIBIT 'A' AIRPORT PROPERTY MAP PARCEL DATA (SHEET 3 OF 3)

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APPENDIX J: VERTIPORT LAYOUT PLAN DRAWINGS SET

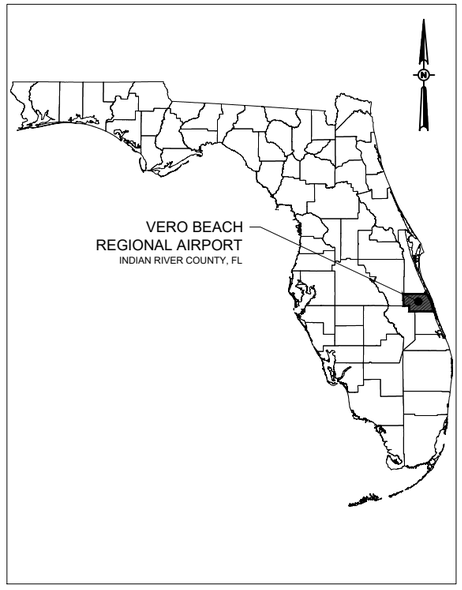
VERTIPORT LAYOUT PLAN

FOR

VERO BEACH REGIONAL AIRPORT (VRB)

VERO BEACH, INDIAN RIVER COUNTY, FLORIDA

AUGUST 2024



INDEX OF SHEETS		
SHEET NUMBER	SHEET TITLE	REVISIONS
VP1	COVER SHEET - VERTIPORT LAYOUT PLAN	
VP2	VERTIPORT DATA SHEET	
VP3	FUTURE VERTIPORT LAYOUT PLAN	
VP4	APPROACH AND DEPARTURE SURFACE DRAWING - VERTIPORT WEST	
VP5	APPROACH AND DEPARTURE SURFACE DRAWING - VERTIPORT SOUTH	
VP6	VERTIPORT OBSTRUCTION DATA TABLES	

VICINITY MAP

LOCATION MAP

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No.	Issue/Description	Date	By

FLORIDA DEPARTMENT OF TRANSPORTATION - OFFICE OF AVIATION
DISTRICT 4
3400 W. COMMERCIAL BLVD.
FT. LAUDERDALE, FL 33309
(954) 777-4130

Name — Date
Title

VERO BEACH REGIONAL AIRPORT

VERO BEACH REGIONAL AIRPORT
3400 CHEROKEE DRIVE
VERO BEACH, FLORIDA 32960
(772) 978-4930

Todd Scher — Date
Airport Director

Plans Prepared By:

This Airport Layout Plan (ALP) was prepared for the Vero Beach Regional Airport according to the applicable Advisory Circulars and the current version of FAA Standard Operating Procedure 2.0 ALP Review Checklist, and accurately depicts the airspace at the time of submittal. The ALP conforms with FAA design standards, except as noted.

Susan M Zellers

August 2024

Susan Zellers, P.E., AAE, ENV SP — Date
Senior Project Manager

HANSON
Engineering | Planning | Allied Services

Hanson Professional Services Inc.
6230 University Parkway, Suite 202
Sarasota, FL 34240
Phone: (941) 342-6321
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REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.
4. ALL DIMENSIONS ARE IN US FEET UNLESS NOTED OTHERWISE.

GENERAL NOTES:

1. VRB AIRPORT LAYOUT PLAN SET WAS DEVELOPED AS A SEPARATE DOCUMENT.

VERTIPORT DATA TABLE

ITEM	FUTURE
AIRPORT IDENTIFIER	VRB
REFERENCE VTOL AIRCRAFT MTOW	12,500 POUNDS OR LESS SMALL AIRCRAFT
MEAN MAX. TEMERATURE HOTTEST MONTH	88° F AUGUST
VERTIPORT ELEVATION (MSL)	23.0'
AIRPORT NAVIGATIONAL AIDS	N/A
VERTIPORT REFERENCE POINT LATITUDE LONGITUDE	N27° 38' 53.27" W80° 25' 04.86"
CRITICAL DESIGN AIRCRAFT	12,500 POUNDS OR LESS SMALL AIRCRAFT
MAGNETIC VARIATION	7.28° W ± 0.34°, CHANGING 0.08° W PER YEAR

TAXIWAY DATA TABLE - FUTURE

FUTURE TAXIWAY	TAXIWAY WIDTH	TAXIWAY LIGHTING
TAXIWAY A	20'	MITL
TAXIWAY B	20'	MITL
TAXIWAY C	20'	MITL

VERTIPORT DATA TABLE

ITEM	WEST	SOUTH
	FUTURE	FUTURE
REFERENCE VTOL AIRCRAFT	12,500 POUNDS OR LESS (SMALL AIRCRAFT)	
CRITICAL AIRCRAFT	12,500 POUNDS OR LESS (SMALL AIRCRAFT)	
PAVEMENT SURFACE TYPE	ASPHALT	
PAVEMENT STRENGTH (WHEEL LOADING)	12,500 POUNDS	
SURFACE TREATMENT	NON-GROOVED	
VERTIPORT COORDINATES (NAD 83) LATITUDE	N27° 38' 53.27"	
LONGITUDE	W80° 25' 04.98"	
VERTIPORT ELEVATION (MSL)	23.0'	
SAFETY AREA DIMENSIONS	150' DIAMETER	
TOUCHDOWN AND LIFTOFF AREA (TLOF) DIMENSIONS	50' DIAMETER	
FINAL APPROACH AND TAKEOFF AREA (FATO) DIMENSIONS	100' DIAMETER	
VERTIPORT LIGHTING TYPE	NONE	
VERTIPORT MARKING TYPE	STANDARD	
APPROACH AND DEPARTURE SURFACE SLOPE	8:1 SLOPE	8:1 SLOPE
APPROACH AND DEPARTURE SURFACE DIMENSIONS	95' / 500' / 4,000'	95' / 500' / 4,000'
VISIBILITY MINIMUMS	VISUAL	VISUAL
VISUAL AND INSTRUMENT NAVAIDS	NONE	NONE

SOURCES:

1. MAGNETIC DECLINATION:	NATIONAL OCEANIC AND ATOMSPHERIC ADMINISTRATION (NOAA) NATIONAL GEOPHYSICAL DATA CENTER, DATED FEBRUARY 2024.
2. VERTIPORT REFERENCE POINT:	CALCULATED USING CENTER OF VERTIPORT TOUCHDOWN AND LIFTOFF AREA (TLOF).
3. BASE MAPPING:	NV5 GEOSPATIAL , DATED MAY 2023.
4. AERIAL PHOTOGRAPHY:	NV5 GEOSPATIAL, DATED MAY 2023.
5. MAPPING REFERENCES:	LATITUDE AND LONGITUDE ARE BASED ON THE FLORIDA STATE PLANE COORDINATE SYSTEM EAST ZONE NAD 1983. VERTICAL CONTROL REFERENCED TO NAVD 1988.

REFERENCES:

1. VERTIPORT PREPARED USING DESIGN CRITERIA FROM FAA ENGINEERING BRIEF No. 105 "VERTIPORT DESIGN" LATEST UPDATE MARCH 13, 2023.

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DRAFT

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(VRB)

VERTIPORT LAYOUT PLAN
DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	JUNE 2024
PROJECT NO:	20A0069W01
CAD FILE:	39_DATA_VERTIPORT.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

VERTIPORT
DATA SHEET

VP2

AUG 16, 2024 1:41 PM ALEXA02176
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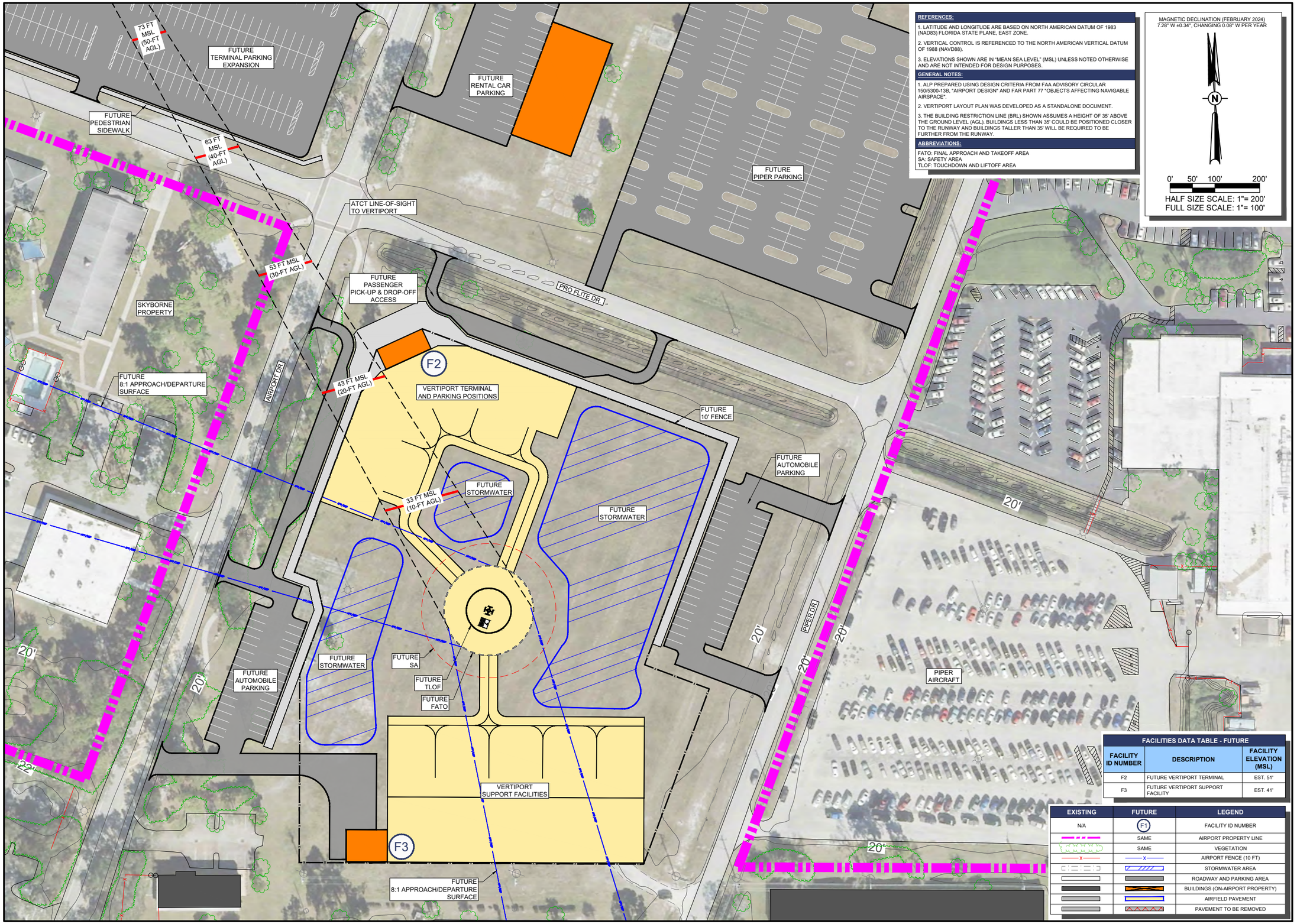

REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. VERTIPORT LAYOUT PLAN WAS DEVELOPED AS A STANDALONE DOCUMENT.
3. THE BUILDING RESTRICTION LINE (BRL) SHOWN ASSUMES A HEIGHT OF 35' ABOVE THE GROUND LEVEL (AGL). BUILDINGS LESS THAN 35' COULD BE POSITIONED CLOSER TO THE RUNWAY AND BUILDINGS TALLER THAN 35' WILL BE REQUIRED TO BE FURTHER FROM THE RUNWAY.

ABBREVIATIONS:

FATO: FINAL APPROACH AND TAKEOFF AREA
SA: SAFETY AREA
TLOF: TOUCHDOWN AND LIFTOFF AREA

MAGNETIC DECLINATION (FEBRUARY 2024)
7.28° W ±0.34°, CHANGING 0.08° W PER YEAR

N

0' 50' 100' 200'

HALF SIZE SCALE: 1"= 200'
FULL SIZE SCALE: 1"= 100'

FACILITIES DATA TABLE - FUTURE

FACILITY ID NUMBER	DESCRIPTION	FACILITY ELEVATION (MSL)
F2	FUTURE VERTIPORT TERMINAL	EST. 51'
F3	FUTURE VERTIPORT SUPPORT FACILITY	EST. 41'

EXISTING	FUTURE	LEGEND
N/A	F1	FACILITY ID NUMBER
	SAME	AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
		STORMWATER AREA
		ROADWAY AND PARKING AREA
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED

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AIRPORT LAYOUT PLAN
DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE: 40_FUT VLP.DWG	
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

FUTURE
VERTIPORT
LAYOUT PLAN

VP3

AUG 16, 2024 1:41 PM ALEXA02176
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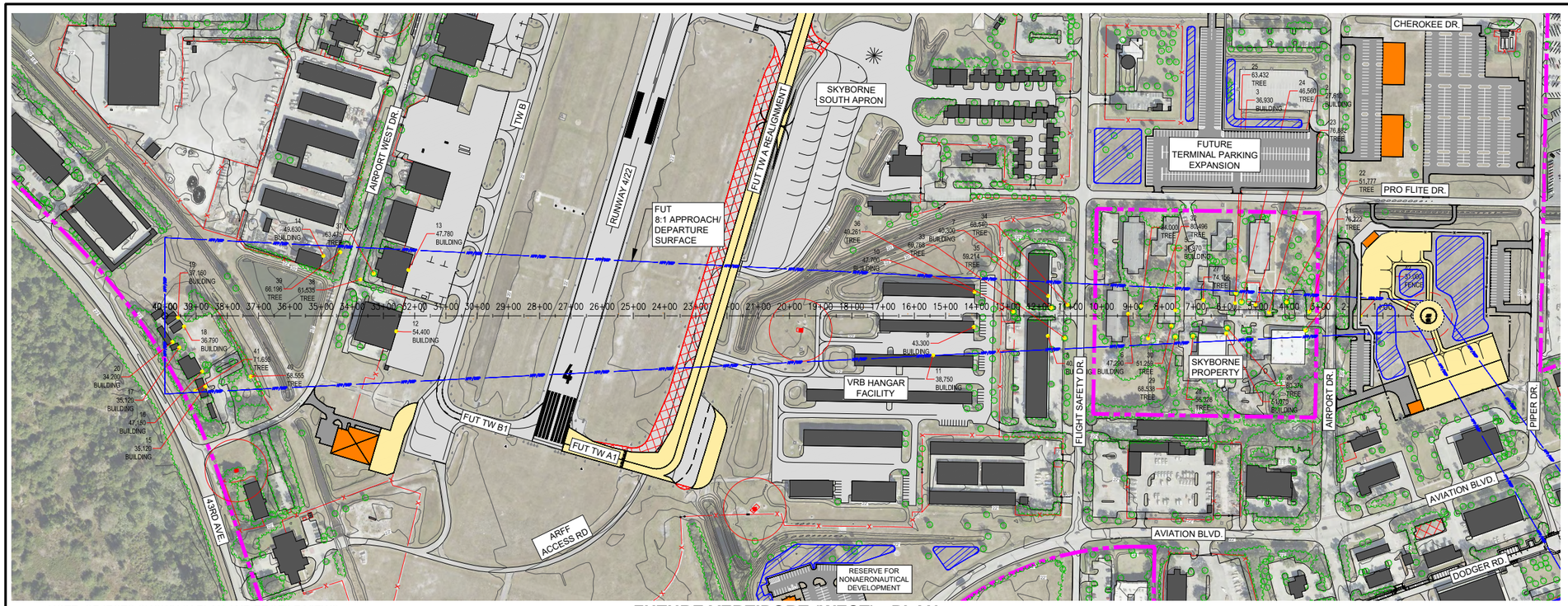
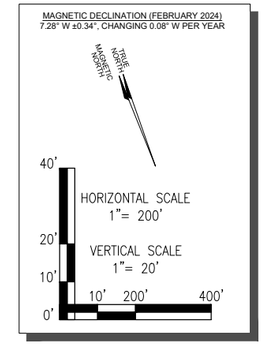


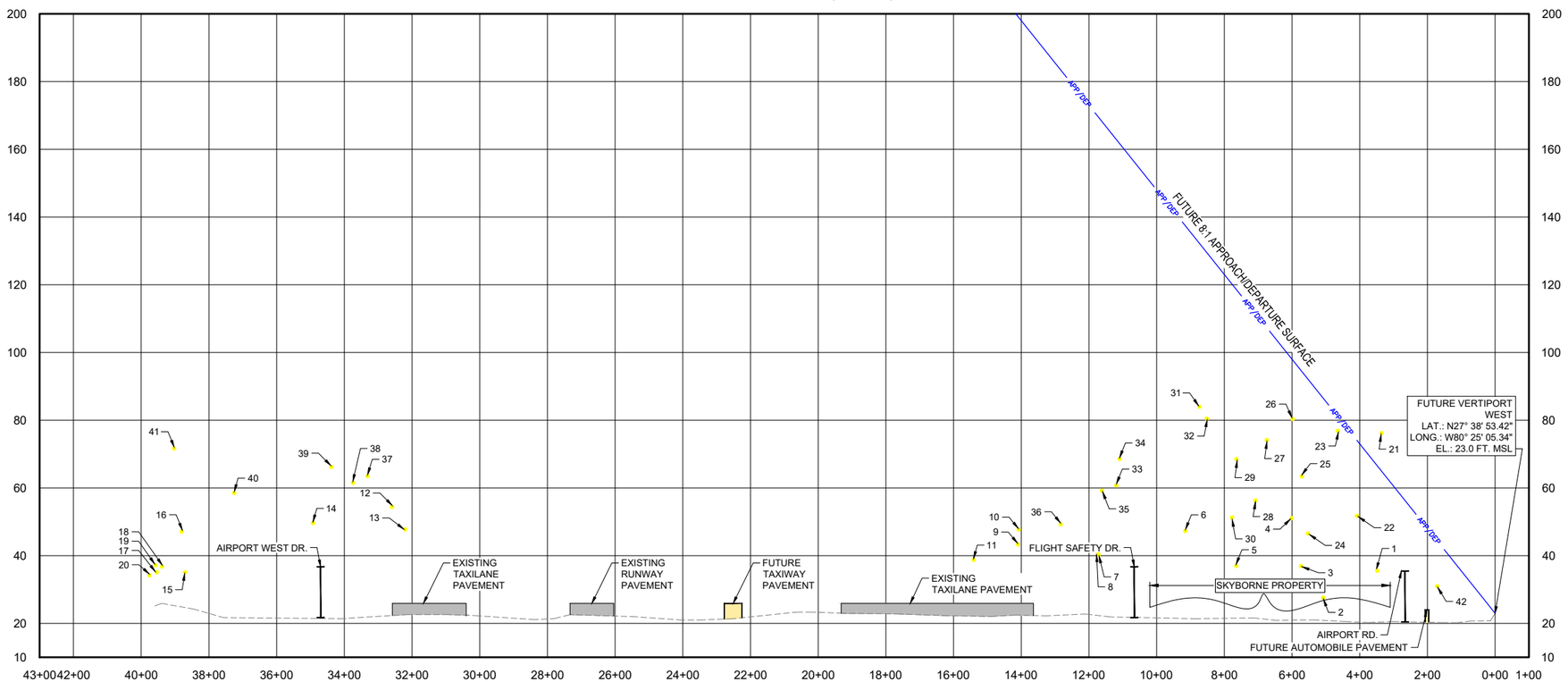


NOTE: OBJECTS SHOWN IN PLAN AND PROFILE VIEWS ARE WITHIN APPROACH/DEPARTURE SURFACE.

● OBJECTS WITHIN APPROACH/DEPARTURE SURFACE

FUTURE VERTIPORT (WEST) - PLAN

FUTURE VERTIPORT (WEST) - PROFILE



REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. ELEVATIONS SHOWN ARE IN "MEAN SEA LEVEL" (MSL) UNLESS NOTED OTHERWISE AND ARE NOT INTENDED FOR DESIGN PURPOSES.

GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. VERTIPORT PREPARED USING DESIGN CRITERIA FROM FAA ENGINEERING BRIEF No. 105, "VERTIPORT DESIGN" LATEST UPDATED MARCH 13, 2023.
3. VRB AIRPORT LAYOUT PLAN SET WAS DEVELOPED AS A SEPARATE DOCUMENT.

OBSTRUCTION NOTES:

1. OBSTRUCTION SURVEY INFORMATION COLLECTED BY NV5 GEOSPATIAL IN MAY 2023.
2. PER FAR PART 77, "OBJECTS AFFECTING NAVIGABLE AIRSPACE", RAILWAYS CONSIDERED AS 23' OBJECTS, INTERSTATE HIGHWAYS AS 17', PUBLIC ROADS AS 15', PRIVATE ROADS AS 10', OR THE HIGHEST OBJECT USING THE ROAD.
3. TREES SHOWN AS OBJECTS MAY REPRESENT MULTIPLE TREES.
4. SEE OBSTRUCTION DATA TABLE SHEET VP6.

EXISTING	FUTURE	LEGEND
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
		STORMWATER AREA
		ROADS
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
N/A	APP/DEP	VERTIPORT APPROACH/DEPARTURE SURFACE

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VERO BEACH REGIONAL AIRPORT (VRB)

AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	41_IPASD_VERTIPORT W_F.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

IPASD - APPROACH AND DEPARTURE SURFACE - WEST

VP4

AUG 16, 2024 1:43 PM ALEXA02176
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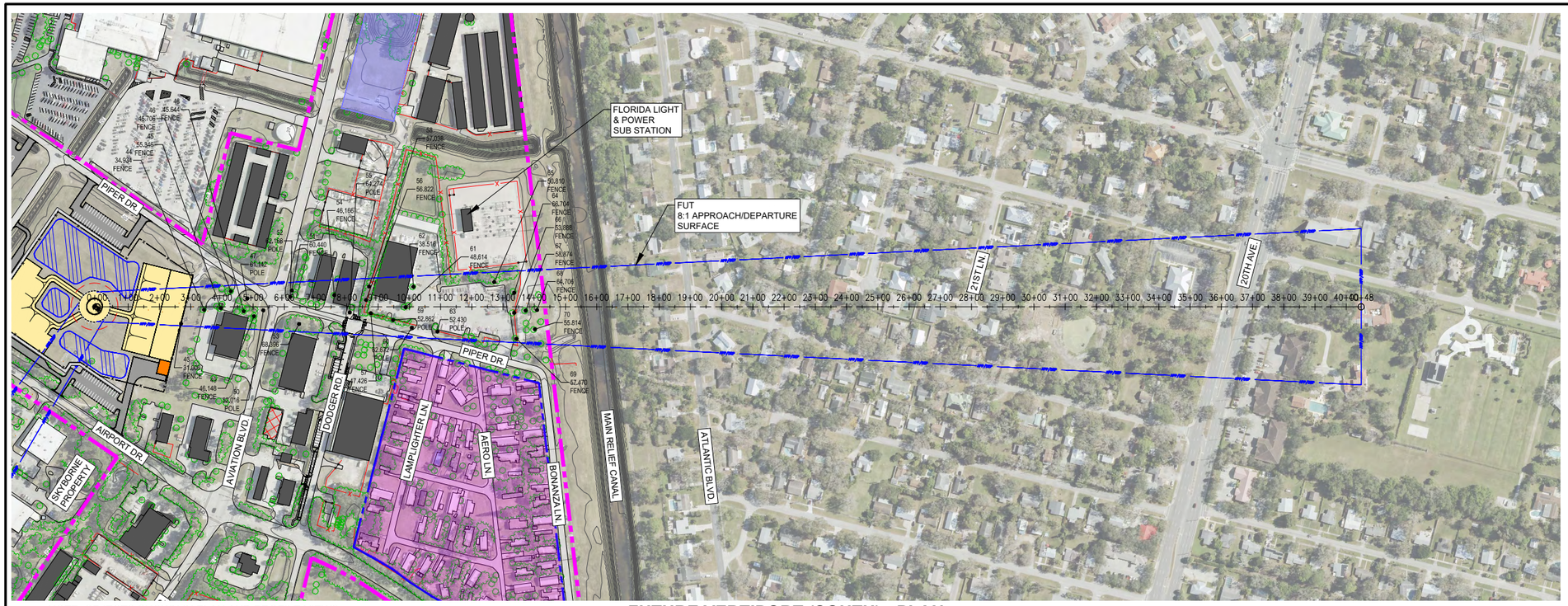
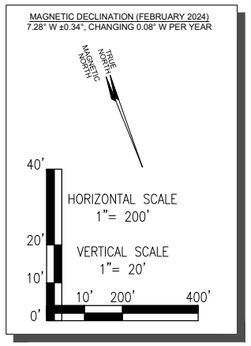


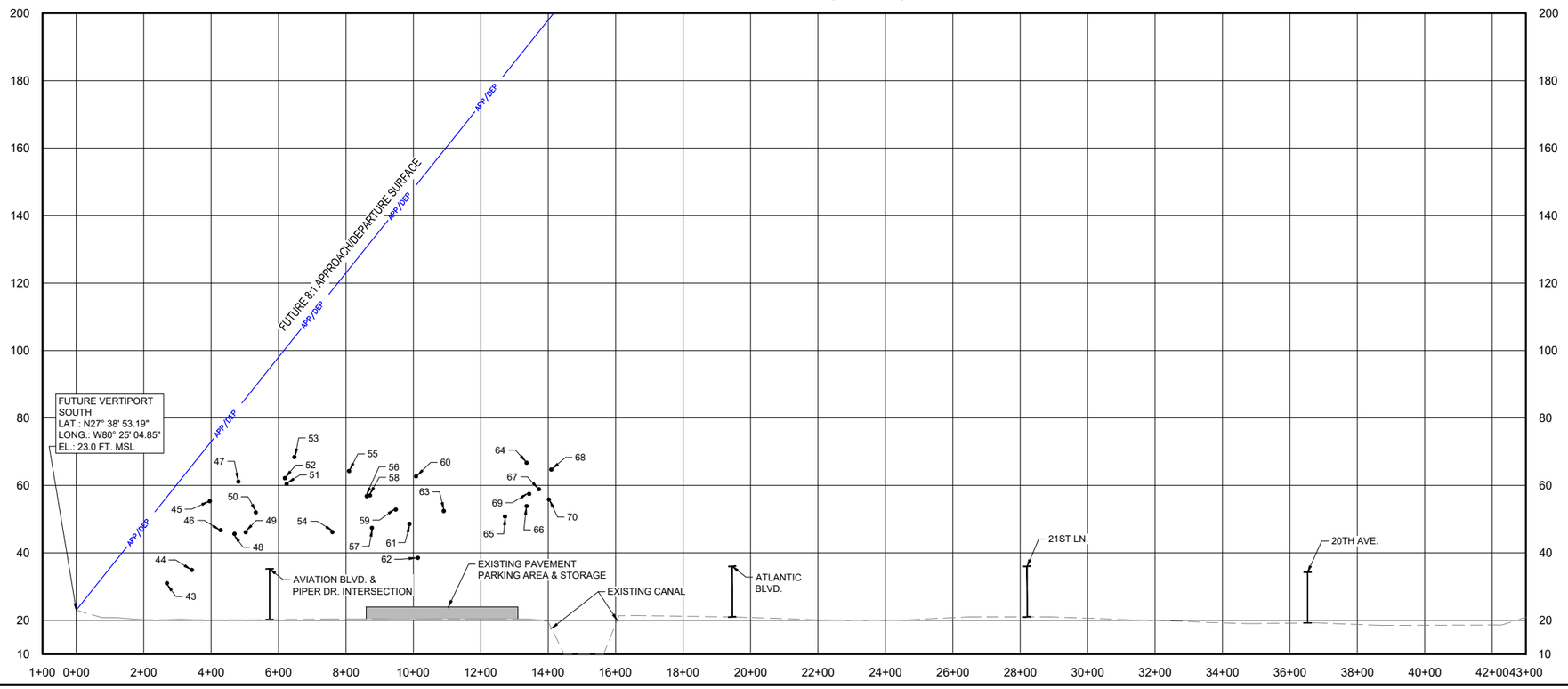


NOTE: OBJECTS SHOWN IN PLAN AND PROFILE VIEWS ARE WITHIN APPROACH/DEPARTURE SURFACE.

● OBJECTS WITHIN APPROACH/DEPARTURE SURFACE

FUTURE VERTIPORT (SOUTH) - PLAN

FUTURE VERTIPORT (SOUTH) - PROFILE



REFERENCES:

1. LATITUDE AND LONGITUDE ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83) FLORIDA STATE PLANE, EAST ZONE.
2. VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
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GENERAL NOTES:

1. ALP PREPARED USING DESIGN CRITERIA FROM FAA ADVISORY CIRCULAR 150/5300-13B, "AIRPORT DESIGN" AND FAR PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE".
2. VERTIPORT PREPARED USING DESIGN CRITERIA FROM FAA ENGINEERING BRIEF No. 105, "VERTIPORT DESIGN" LATEST UPDATED MARCH 13, 2023.
3. VRB AIRPORT LAYOUT PLAN SET WAS DEVELOPED AS A SEPARATE DOCUMENT.

OBSTRUCTION NOTES:

1. OBSTRUCTION SURVEY INFORMATION COLLECTED BY NV5 GEOSPATIAL IN MAY 2023.
2. PER FAR PART 77, "OBJECTS AFFECTING NAVIGABLE AIRSPACE", RAILWAYS CONSIDERED AS 23' OBJECTS, INTERSTATE HIGHWAYS AS 17', PUBLIC ROADS AS 15', PRIVATE ROADS AS 10', OR THE HIGHEST OBJECT USING THE ROAD.
3. TREES SHOWN AS OBJECTS MAY REPRESENT MULTIPLE TREES.
4. SEE OBSTRUCTION DATA TABLE SHEET VP6.

EXISTING	FUTURE	LEGEND
		AIRPORT PROPERTY LINE
	SAME	VEGETATION
		AIRPORT FENCE (10 FT)
		STORMWATER AREA
		ROADS
		BUILDINGS (ON-AIRPORT PROPERTY)
		AIRFIELD PAVEMENT
		PAVEMENT TO BE REMOVED
N/A	APP/DEP	VERTIPORT APPROACH/DEPARTURE SURFACE

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AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE: AUGUST 2024
PROJECT NO: 20A0069W01
CAD FILE: 42_IPASD_VERTIPORT S_F.DWG
DESIGN BY: JA
DRAWN BY: JA
REVIEWED BY: SZ

SHEET TITLE

IPASD - APPROACH AND DEPARTURE SURFACE - SOUTH

AUG 16, 2024 1:44 PM ALEXA02176
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VERTIPORT (WEST) OBSTRUCTION DATA TABLE

OBJECT DATA			FUTURE 8:1 APPROACH/DEPARTURE SURFACE		PROPOSED DISPOSITION
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
1	BUILDING	36	67	-31	NO ACTION
2	BUILDING	28	86	-59	NO ACTION
3	BUILDING	37	95	-58	NO ACTION
4	BUILDING	51	98	-47	NO ACTION
5	BUILDING	37	119	-82	NO ACTION
6	BUILDING	47	137	-90	NO ACTION
7	BUILDING	40	169	-129	NO ACTION
8	BUILDING	40	170	-129	NO ACTION
9	BUILDING	43	199	-156	NO ACTION
10	BUILDING	48	199	-151	NO ACTION
11	BUILDING	39	216	-177	NO ACTION
12	BUILDING	54	430	-376	NO ACTION
13	BUILDING	48	426	-378	NO ACTION
14	BUILDING	50	460	-410	NO ACTION
15	BUILDING	35	507	-472	NO ACTION
16	BUILDING	47	508	-461	NO ACTION
17	BUILDING	35	517	-482	NO ACTION
18	BUILDING	37	515	-479	NO ACTION
19	BUILDING	37	518	-481	NO ACTION
20	BUILDING	34	520	-486	NO ACTION
21	TREE	76	65	11	TRIM/REMOVE
22	TREE	52	74	-22	MONITOR GROWTH
23	TREE	77	81	-4	MONITOR GROWTH
24	TREE	47	92	-46	MONITOR GROWTH
25	TREE	63	94	-31	MONITOR GROWTH
26	TREE	80	96	-17	MONITOR GROWTH
27	TREE	74	107	-33	MONITOR GROWTH
28	TREE	56	112	-55	MONITOR GROWTH
29	TREE	69	119	-50	MONITOR GROWTH
30	TREE	51	120	-69	MONITOR GROWTH
31	TREE	84	132	-48	MONITOR GROWTH
32	TREE	80	129	-49	MONITOR GROWTH
33	TREE	61	163	-102	NO ACTION
34	TREE	69	162	-93	MONITOR GROWTH
35	TREE	59	168	-109	NO ACTION
36	TREE	49	183	-134	NO ACTION
37	TREE	63	439	-376	NO ACTION
38	TREE	62	445	-383	NO ACTION
39	TREE	66	453	-387	NO ACTION
40	TREE	59	489	-430	NO ACTION
41	TREE	72	511	-439	NO ACTION
42	FENCE	31	44	-13	NO ACTION

VERTIPORT (SOUTH) OBSTRUCTION DATA TABLE

OBJECT DATA			FUTURE 8:1 APPROACH/DEPARTURE SURFACE		PROPOSED DISPOSITION
OBJECT NUMBER	OBJECT DESCRIPTION	OBJECT ELEVATION (MSL)	SURFACE ELEVATION (MSL)	SURFACE CLEARANCE (-) OR PENETRATION (+)	
43	FENCE	31	57	-26	NO ACTION
44	TREE	35	66	-31	MONITOR GROWTH
45	TREE	55	72	-17	MONITOR GROWTH
46	TREE	47	77	-30	MONITOR GROWTH
47	POLE	61	83	-22	NO ACTION
48	TREE	46	82	-36	MONITOR GROWTH
49	TREE	46	86	-40	MONITOR GROWTH
50	POLE	52	90	-38	NO ACTION
51	TREE	60	101	-41	MONITOR GROWTH
52	POLE	62	100	-38	NO ACTION
53	TREE	68	104	-35	MONITOR GROWTH
54	TREE	46	118	-72	MONITOR GROWTH
55	POLE	64	124	-60	NO ACTION
56	TREE	57	131	-74	MONITOR GROWTH
57	TREE	47	133	-85	MONITOR GROWTH
58	TREE	57	132	-75	MONITOR GROWTH
59	POLE	53	141	-89	NO ACTION
60	POLE	63	149	-86	NO ACTION
61	TREE	49	147	-98	MONITOR GROWTH
62	TREE	39	150	-111	NO ACTION
63	POLE	52	159	-107	NO ACTION
64	TREE	67	190	-123	NO ACTION
65	TREE	51	182	-131	NO ACTION
66	TREE	54	190	-136	NO ACTION
67	TREE	59	195	-136	NO ACTION
68	TREE	65	199	-134	NO ACTION
69	TREE	57	191	-133	NO ACTION
70	TREE	56	198	-142	NO ACTION

NOTES:

1. OBJECTS THAT ARE IN BOLD TEXT ARE LOCATED ON-AIRPORT PROPERTY. ALL OTHER OBJECTS ARE LOCATED OFF-AIRPORT PROPERTY.
2. SELECTED OBJECTS FOR THE OBSTRUCTION ANALYSIS ARE OBJECTS THAT ARE LOCATED WITHIN THE APPROACH/DEPARTURE SURFACE BOUNDARY. THEN, OBJECTS ARE FURTHER ANALYZED AS CLEARANCE OR PENETRATION ACCORDING TO THE SURFACE.
3. REFER TO THE FUTURE VERTIPORT PLAN AND PROFILES ON SHEETS VP4 AND VP4 FOR APPROACH/DEPARTURE SURFACE OBSTRUCTIONS.
4. OBSTRUCTION SURVEY COMPLETED IN MAY 2023 AND COMPLIES TO FAA AC 150/5300-18B.
5. CLEARANCE OR PENETRATION MAY NOT MATCH OBJECT ELEVATION MINUS SURFACE ELEVATION DUE TO ROUNDING.
6. OBJECTS WITH A NEGATIVE NUMBER (-) ARE BELOW OR CLEAR OF THE APPROACH/DEPARTURE SURFACE AND OBJECTS WITH A POSITIVE NUMBER (+) ARE ABOVE OR PENETRATE OF THE APPROACH/DEPARTURE SURFACE.
7. OBJECTS THAT ARE BELOW THE APPROACH/DEPARTURE SURFACE BY 100 FEET OR GREATER HAVE PROPOSED DISPOSITION OF "NO ACTION".
8. EXISTING AND FUTURE ROAD ELEVATIONS ARE TRAVERSE WAY ELEVATION PLUS TRAVERSE WAY ADJUSTMENTS (23' FOR RAILWAYS, 17' FOR INTERSTATE HIGHWAYS, 15' FOR OTHER PUBLIC ROADS, OR 10' FOR PRIVATE ROADS).

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AIRPORT LAYOUT PLAN DRAWINGS SET

DATE	REVISION DESCRIPTION	BY

ISSUE:	AUGUST 2024
PROJECT NO:	20A0069W01
CAD FILE:	43_VERTIPORT_OBS DATA TABLES.DWG
DESIGN BY:	JA
DRAWN BY:	JA
REVIEWED BY:	SZ

SHEET TITLE

VERTIPORT OBSTRUCTION DATA TABLES

VP6

AUG 16, 2024 1:45 PM ALEXA02176
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